# PART FIRST.

## ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Annual Medical Report for the year* 1850-1851, *of the Detachment 4th Regiment N. I. stationed at Sircee.* By Assistant Apothecary J. STIMPSON.

### GENERAL OBSERVATIONS.

1. *Topographical description of the Station and its Vicinity, Atmospheric Phenomena, &c.*—The town of Sircee is situated in the Table land of Canara above the Ghauts, being about 45 miles from Coompta the nearest sea-port, and about 2,500 feet above the level of the sea. The country around is very irregular, commanding as far as the eye can reach very beautiful and picturesque scenery, being bounded by hills clothed with forests, and valleys either under cultivation with streams of water running through them, or thick or impervious jungle. The prospect to the south-west and extending to the north is the most attractive, being marked by continuous ranges of low hills undulating along the horizon, and forming the limits of the western Ghauts, while that to the East and interior, presents lesser inequalities, and is clear of forest for three or four miles.

The jungle affords ample sport to the Huntsmen, being inhabited by a variety of wild animals, Tigers, Chetas, Bison, wild Hog, Deer, &c.

The Town throughout is tolerably clean, the inhabitants well clothed, their houses comfortable, and the streets and public thoroughfares are kept clean and in good repair, but the latter from the soft character of the soil, and the immense number of loaded bullocks and carts (with exports from the interior) traversing daily on them, during the dry season to the coast, are speedily broken up and almost converted to powder.

The principal roads are,—the Darwar toward the north-east, which keeps the post communication from and to Madras and Bombay,—the next is that running easterly to the Mysore Territories, or the tram road fronting the Sepoy's Barracks, which is crossed by the main street into the town and by that leading southerly to the coast and Gairsoppa Falls ; the latter for nearly two miles run together, when they diverge right and left, the former being very tortuous in its course, especially on the ascent of the Ghauts, and leads to Coompta the nearest sea-port. This road in the dry season is one of very extensive traffic, but during and immediately after the monsoons, it becomes out of repair and in several places is rendered somewhat impassible from being knee deep in stiff mud. The following shew the past year's average of bullocks and carts passed from and to the coast.

| | |
|---|---|
| Bullocks passed from hence to Coompta..... | 53,060 |
| Carts passed from hence to Coompta..... | 2,110 |
| Bullocks returned from Coompta..... | 62,343 |
| Carts returned from Coompta..... | 2,348 |

The native population exclusive of the Detachment is about 4,370 in number, consisting of 890 Mahomedans, 3,405 Hindoos and 75 Christians—among the two former are several wealthy merchants trading chiefly in cotton, the produce of the Ceded Districts, and strange to say that from a population so extensive scarcely a good mechanic of any description can be found, with the exception of a few, who perform some beautiful carvings on sandalwood ; for other carpentery purposes none excepting very rough workmen, are obtained.

There are only three Europeans at this station, a Sub-Collector and two Officers of the Detachment.

The inhabitants appear an healthy race, but they are not so well built nor as powerful as the people of Malabar, and like the rest of the Natives of India are devotees to their idols of wood and stone, the principal being designated " Maurie" a goddess lodged in a Temple in the Town, and only brought out once in three years on a cart, and kept on an open plain for seven days, when cattle and fowl of every description are sacrificed as a protection against cholera, small pox and other contagious maladies, and with the belief also that such other diseases, as the Offerers may then have, will be effectually healed.

The cultivation in and about the neighbourhood consists principally of garden produce, such as Areca nut and Cardamoms.

The drinking water and water for culinary purposes is procured chiefly from wells, from 4 to 8 feet in diameter and from 25 to 30 feet in depth, the principal is at one extremity of the town, not far from a tank. The water is good and does not possess any medicinal powers, nor do I know of any thing peculiar in its chemical properties.

The Falls are surrounded by low hills on all sides, covered with forest and bearing a very pretty aspect. On an eminence to the north west is erected the Canara Bungalow, and directly opposite that of Mysore, they are separated from one another by the fearful precipice into which the Cataract descends, but a line of communication is formed in the dry season on the stony valley to the left, (in which are several small ponds of water) described as the Gairsoppa river. During the rains this becomes obstructed, and a tortuous line round the hills is then the channel of intercourse. The river is the formation of these astonishing Falls, which meeting with this prodigious excavation, interrupting the continued flow of its current, is consequently precipitated over a fall upwards of a 1000 feet high. The water is sent partially up again, owing to the power with which it is impelled, to a great height in foam and mist; on which the sun forms a beautiful rainbow and the mist when blown in the direction of the wind, to a person advancing near it, makes him feel as if immersed in water. The Falls are described as being four in number, and are designated from some analogy subsisting between them and the name they bear. 1st The Great Fall being the most considerable and terrific. 2nd. The *roarer* from the noise the water produces. 3rd. The *rockets* so named from its shooting out and bursting like a fire work and 4th Dame Blanche from its resemblance to a liquid silk. Whatever idea may be conveyed from these terms, no comprehension of the true characters of the falls can be formed unless personally viewed. During the monsoons when the rush of waters from the neighbouring hills is great into the river, several others are said to be formed, or perhaps all are blended into one mighty volume of water.

The Falls as seen from the bungalows, present nothing interesting in themselves, the noise alone attracting notice, being like that of a sea in constant boisterous motion rolling in the surf; but on advancing to their immediate vicinity, their whole magnificence is at once exhibited, and the rocks forming the precipice down which they descend, seem to rise as walls in their defence, so that an approach is with difficulty and danger obtained. This is indeed a prodigious theatre of

nature, situated in a lonely valley, the greatness of which no imagination can conceive, nor pencil paint; and here may I add, that the District of Canara, throughout appears one of grandeur and magnificence, consisting of hills and valleys, woods and forests. In it are to be observed some of the irregularities of the earths surface, the striking characters of the falls of Neelcundee, and the glory of that of Gairsoppa! and it is not improbable that in a land so uneven, with thick and impervious jungle, parts of which remain unexplored, that there may exist other scenes of nature adapted to excite notions of sublimity and wonder!

In illustration of the climate of Sircee and its effects, I am sorry to say that my experience is very limited, so I shall write from the little I have seen and heard, and hope in course of time to give a more perfect description on this point.

During the months of November, December and January, it is cold, bracing and foggy, particularly toward the close of the season. The thermometer ranges in the shade from 60° to 76°, and were it not for the north-easterly winds which now prevail, would contribute much to a sanitary influence on the valetudinarian. The fog continues very heavy until the end of March, so much so, that at times the country around appears as if covered with smoke, and a moist vapour abounds in the atmosphere so as to produce a slight wetting of the exposed parts of the body. The hot season commences about the close of February and lasts till the end of May, when the monsoons set in, which are usually preceded by sudden thunder storms with rain and hail. The winds are variable at this period and the atmosphere sultry and very oppressive. The rains continue to pour with occasional breaks until the end of October, being attended towards their termination with much the same appearances as indicated their approach. There are no meteorological observations kept at this station, so that I am unable to give the mean quantity of rain.

*2nd. Position of Barracks and Hospital with means of ventilation and extent of accommodation.*—The Barrack is built on an elevated mound to the south of the town, and faces to the east, its left rests on the main road leading to the Mysore Territories and Ceded Districts. The store room and hospital are situated on its right, at a few paces from one another, and in rear of the store room about 20 yards is the

magazine. The mound is a level of nearly 200 yards, in circumference, of a quadrangular figure and forms the drill ground of the detachment, it slopes precipitously to the left and rear of the hospital, and in front of the barrack about 100 yards distant it gradually descends, the lines of the Sepoys are here situated, facing inwards and occupying about 300 square yards with the main road in the left rear. On the further side of the main road to the left of the barracks and opposite the lines of the men is a small spot of ground occupied by a few houses of the detachment and the conjee house lies at its furthest extremity; round this spreads the town of Sircee, three sides of which are surrounded by tanks and wet cultivation. The hospital measures 40 feet in length and 40 in breadth, is freely ventilated, and admits of accommodation for six patients.* It has a verandah in front and rear, the Surgery is at one extremity of the latter. The cook-room and privy are detached. All the public buildings are built of brick and chunam, and are tiled with the exception of the magazine and solitary cells. During the monsoon they are covered with tatties so as to preserve them from its effects.

The house occupied by the Officers of the detachment is situated also on a mound, not far from that forming the parade ground of the detachment, being separated by a declivity. Adjoining in rear (with a a small intervening space between) is the grave yard, and a little further back, the travellers bungalow, and further onward inclining to the right is the Collector's residence. The town of Sircee viewed from this direction, appears imbedded in a forest of trees, while that from the opposite or cantonment side present merely its suburbs.

The jail is situated in the centre of the town in an open spot of ground, the walls are built of brick and chunam and the roof is tiled. It contains five separate cells or apartmets, each affording accommodation for the prisoners. A small room somewhat detached is appropriated as an hospital, but it is not sufficiently set apart, as in case of any epidemic, infection would speedily be transmitted to the inmates of the prison. It is surrounded by a wall about twelve feet high, and in rear of the prison are the cook room and privy with a well, the water of which the prisoners use for drink, cooking, and purposes of ablution.

Crime does not appear so prevalent among the inhabitants of Canara, as that of Malabar, which may be attributed to the Moplays and Tiers

* Why so few?

being permitted to carry knives with them, ready to resent injuries, or in quarrels to wound one another and frequently even commit murder.

3*rd*. *Duty and Employment, &c.*—The duty and employment of the men of the detachment are not of a severe or harassing nature, but such as is necessary for exercise and discipline.

4*th*. *Average strength of the Corps.*—The average strength of the detachment throughout the year composing this out-post has been Europeans 2 and Natives 161.

*Remarks on the principal classes of disease, &c.*—On this point I have but little to say. The principal classes of diseases that occurred will be seen by the Annual Return of sick, to have been *fevers* and *rheumatisms ;* the *former* evidently mild in character, progressed speedily to recovery from the usual remedies, such as an emetic on admission, followed by purgatives, and when necessary antiperiodics and tonics. *Rheumatism ;* The acute form of the disease had in a few instances been troublesome, the feet, ankles and knees were the parts most commonly affected, attended by effusion and swelling of the joints, in these cases I found the want of vinum colchici, which though indented for twice was refused, the cure had therefore to be effected more tardily with diaphoretics, anodyne and stimulating liniments, and sometimes leeching and blistering.

Regarding the other diseases embraced in the Return, nothing of any note seems to have occurred to merit observation.

6*th*. *A detailed narrative of any epidemic.*—No disease of an epidemic nature occurred during the period included in this Report.

7*th*. *If sufficient extensive materials be possessed to shew whether sickness and mortality have been greatest in the young or old.*—Sickness appears to have affected equally both young and old.

8*th*. *Vaccination if kept up in the Corps.*—Vaccination has been kept up in the station and in the detachment by the vaccinator, and I use every exertion to practice and maintain its diffusion among the people.

9*th*. *Remarks on such cases as have been particularly worthy of observation.*—Under this head only one case appeared of any importance, that of phthisis pulmonalis. The subject of this disease was a man of very delicate conformation, who had been three times admitted during the year, first for *catarrhus chronicus*, second for *asthma convulsiva period*, and lastly for *phthisis pulmonalis*. On my first acquaintance with this

individual, having come to hospital for an aperient, I was struck with the hissing or bronchial character of his voice, which indicated much phthisical degeneration, and as I considered the climate inimical to his disease, proposed sending him on sick certificate to his native country, but he objected to the measure, and expressed every desire to do his duty, which he continued to perform until the morning of the 2d January, when he was admitted with much bodily exhaustion and died suddenly after a fit of coughing at 7 o'clock in the evening.

No post mortem examination was made, owing to objection on the part of his friends.

---

ARTICLE II.—*Cases of poisoning by opium.* Communicated by Assistant Apothecary J. MARTIN.

Since my last communication I attended upon two other cases of poisoning by opium; one occurred under accidental circumstances, the other was wilful on the part of the patient.

The first case contains a serious lesson, to those who are in the habit of keeping medicines in their houses. *Case i.* I was in professional attendance upon Mrs. C. my neighbour, who was suffering from weak digestion and flatulent colic, and recommended her to take on going to bed at night, a tea cupful of ginger tea. In a finger glass was contained some dry ginger, which Mrs. C. gave to the maty to have infused at 9 P. M. The infusion when brought was observed by Mrs. C. to have a nauseous smell, which induced her to lay it aside as she suspected that it was not properly made, and therefore did not drink it. Next morning the infusion was taken away to the kitchen and drank by the servant woman, who, after about an hour, was seized with an epileptic fit, as it was described to me.

On calling to see Mrs. C. at 8 o'clock that morning, I was informed that the servant woman had had a fit, and that she was lying down quite weak. On enquiring into the cause of her being seized in this manner none at first could be assigned, but upon second consideration, Mrs. C. said, "she drank the ginger tea this morning, which was made for me last night, and I think it contained opium." It only

then occurred to Mrs. C. that in the finger glass in which the ginger had been, was also a piece of opium, the exact quantity could not be ascertained, perhaps about 20 grains, and as the opium was not in the glass when looked for that morning, and the peculiar odour of the infusion was recollected, Mrs. C. was positive that the narcotic also must have been, unintentionally and accidentally, infused with the ginger.

On examining the patient, I found her to be in a drowsy state but sensible when spoken to, and easily roused. Pupils contracted and somewhat sensible to the stimulus of light, skin cold with scarcely any sensible perspiration on it ; pulse weak and small, tongue moist and stained with the characteristic color of betel. She was able to sit up, steadying her head for a short time, by placing her back against the wall, but could neither stand nor walk without assistance.

As she had the power of deglutition, I gave her an emetic of sulphate of zinc (30 grains) but without the desired effect, although warm water also was given to assist in ensuring this end. The stomach pump was now put into use, and after completely washing out this organ, coffee, without sugar or milk, was administered, and the patient was kept awake by talking to her and moving her about.

I had scarcely any trouble with this case, as she was sensible of the state in which she was and of course was anxious to be relieved from her sufferings.

Case ii. The subject, a well formed robust woman, about 25 years of age, took a large quantity of opium. If any thing like an approximation to truth can be arrived at from enquiry as to the quantity swallowed by her, I should say she had taken at the very least, ʒ iij of solid opium. For on examining her, a lump, weighing ʒ viss was found tied in one end of her waist cloth. She confessed to having purchased six annas' worth of opium in a small town, called Palde, near Nagpore, and that the lump found upon her was half of what she purchased : the other half she took. I saw her an hour after she took the drug.

In this case also sensibility was present ; although she was very drowsy, she answered questions readily and rationally when spoken to. Pupils contracted and sensible to light ; skin cold and covered with perspiration, standing out in drops, particularly about the forehead and face. Pulse was hard and strong.

Previous to sending for me, the neighbours, (her husband having decamped after inflicting upon her a severe flagellation,) administered to her some soap-nut water to act as an emetic. This only made her sick at stomach, and caused a copious secretion of viscid mucus which was hawked up after the stomach was cleansed by the pump. The treatment which I had recourse to in this case was precisely similar to that adopted in the one above mentioned.

The first two quantities of water which were removed from the stomach, smelled strongly of opium, and was very much discolored, partly owing, no doubt, to the mixture of soap-nuts. I had great difficulty in getting the pump to act freely as its valves were frequently clogged with portions of the thin tough membrane which envelopes the seed of the nut, a considerable quantity of which was administered mixed with water as mentioned above.

---

ARTICLE. III—*Fungus of the Testicle treated in the Detail Hospital at Secunderabad by Professor* SYME'S *method.* Reported by Assistant Apothecary ALEXANDER BOGG.

It is well known that until Mr. Laurence in 1808 wrote upon this disease the organ thus affected used to be removed by castration. Mr. L. proposed that the fungus substance should be removed either by escharotics, the ligature, or the knife, Neither of these modes was found to answer, as the normal powers of the testicle were completely lost, but about 1845 Mr. Syme, adopted the operation now usually performed viz. that of enlarging the orifice from which the fungus arises, pressing the diseased testicle back, and covering it with the detached flaps of the scrotum, and thus accomplishing the cure without injury to the action of the organ. It then became questionable whether the diseased testicle thus treated would again be able to perform its functions naturally, this point was set at rest by a case related by Dr. Duncan who performed the same operation (vide page 281, Braithwaite's retrospect, vol. xii 1845), in which it will be found that the patient's feelings in regard to the sexual desires, were in no way impaired, and the following case will tend to corroborate Dr. D's statement.

*Poorunram* a sepoy, came into hospital on the 3d of May last with a fungus excrescence arising from the fore and lower part of left testicle, and about the size of a common fowl's egg. The disease is stated to have commenced about a month previous to his admission (probably more), and appeared to involve the whole organ. The right testicle was also considerably enlarged and indurated. The patient's appearance was cachectic, and he had been in bad health for some time, having suffered severely from the effects of syphilis.

The fungus was painted twice daily with an alcoholic solution of iodine, and alteratives with tonics were exhibited to improve the general health—the latter object was in a great measure fulfilled, but there was scarcely any impression made upon the fungus. On the 28th of the same month the following operation was performed by the Surgeon in charge, which would have been done earlier, but the patient refused to submit to it. An elliptical incision was made around the fungus and extended about an inch upwards and downwards—the integuments were then raised and brought over the growth. Complete reduction having been effected, the edges of the wound were kept together by three sutures and the whole supported by straps of adhesive plaster and a bandage. The plan however did not succeed, as on the following day all the stitches had given way, and the testicle re-protruded more than ever. In fact on the very day of the operation the ligatures could hardly retain their hold, for while the Assistant was applying them one or two gave way, owing to the extensive disease of the scrotum, and as it became apparent that the skin was not only diseased, but barely sufficient to cover the protrusion, it was resolved that the cure should be effected by pressure with other means. Accordingly, a graduated pad made of lints, straps of adhesive plaster, and a proper bandage were applied, the straps were so arranged as to envelope both the testes completely. These were renewed every second or third day. No unpleasant symptom followed—the wound progressed favorably and the fungus gradually diminished in size, and on the 29th of July the report in the Journal is, "ulcer healed, and the diseased testicle is of normal size and without pain." The right testicle and scrotum also acquired their normal condition, after having resisted every other means.

As the patient had a great dread of pain, and as he begged that he should have something to enable him to escape it, he was placed under

the anœsthetic influence of chloroform, 40 minims were exhibited by inhalation which rendered him perfectly unconscious.

On enquiring of the patient respecting his sexual desires he declared that they are as strong as ever.

*Remarks.*—I have sent you this case not from any novelty, but it shews that it is not absolutely necessary that the parts should be covered by the natural integuments, and that the latter need not be in a perfectly healthy condition to allow the operation being performed—as in this instance the scrotum was diseased and retracted to such a degree as to be of no service in aiding a restoration of the diseased organ to health.

This case will also serve to illustrate what an inestimable blessing an agent like chloroform must be to man, as by its influence he is enabled to endure almost any amount of pain with impunity.

---

# PART THIRD.

## REMARKS BY THE EDITOR.

It gives us much pleasure in being able to announce to our readers and well-wishers, that our present issue forms the first number of the second volume of the *Madras Journal of Medical Science*. Notwithstanding the many difficulties we had to contend with, we hope with the help of our friends to go through a second year; and as we believe it is customary at the commencement of every Editorial year to make our acknowledgments to the public for past support, we now most cheerfully and willingly come forward to offer our sincere thanks to our Subscribers and Contributors for their indulgent and liberal support, and beg to solicit the continuance of the same throughout the present year.

We again pledge ourselves to do our utmost to make this Periodical as interesting and useful as we can, and we are certain, as far as we are concerned, that the present volume

will bear comparison with its predecessor, and as we gain experience in the new career, we trust also to be able to enhance the value of our little Journal. All that we ask from our brethren for whose benefit it has been started, is their countenance, which must embrace not only *pecuniary* but also *literary* support.

To the Members of the Medical Board are due our grateful thanks for the assistance we have received from them in placing at our disposal several papers drawn up by Medical Subordinates. One of these contributions we have much pleasure in publishing in our present number, and others will shortly appear.

We fully appreciate the kind eulogies passed by the Indian Press on our humble efforts, and we are thankful for the manner in which our short-comings have been overlooked. We feel highly flattered at the notice taken of our exertions by one of the leading Medical Periodicals of Great Britain, the "*Lancet*," which makes us look forward with hope to the time when our periodical will, at no distant period, be the probable means of effecting an improvement in the position and prospects of our Subordinate brethren.

---

In the supplement to the *Fort St. George Gazette*, of the 14th September last, our readers will find published the Annual Report of the Medical College for the year 1851-52, together with the Medical Board's letter submitting it to Government, and the Minutes of Consultation thereupon. To those interested in the advancement of Medical education, the perusal of the Supplement must prove extremely interesting, as it contains information of considerable importance to the people of India both high and low. The Report both as regards the progress of the students and the curriculum of study prescribed by the College is highly satisfactory, and the efforts made by the College Council to bring this Institution to the highest state of efficiency are very commendable.

His Excellency Sir Henry Pottinger and Council have evinced marked desire to advance the Medical College, which of late has received every support that can be given to it by Government.

We are informed that measures have been adopted to secure for the Madras Medical College the recognition of the Royal College of Surgeons of England. When this is effected, it will place the College on an equality with the Provincial Schools of Medicine of Great Britain and with the Medical College of Bengal. By this measure not only will the natives and the poorer classes of Europeans and East Indians be benefitted as regards the means available to their sons to study the profession of medicine, but it will prove of considerable advantage to the higher classes also; as a Student on receiving the Diploma of this College should he wish to become a member of the Royal College of Surgeons, will be required to pass only *six* months study at one of the recognized Schools and Hospitals in Great Britain to entitle him to go up for the Diploma of the Royal College of Surgeons in England. Apart from the expense in having a young man educated in England for a period of five years, the advantage of having him under the immediate control of his parents and friends must be considerable, particularly in forming his habits and character.

To such as may be desirous of finishing their Medical Education in England, greater facilities of doing so than at present exist, will be shortly afforded by the contemplated improvements in our Steam Communication with England. And to those desirous of setting up as Private Practitioners in India, the Madras Medical College offers greater advantages than any of the Medical Schools in Europe, as the Student whilst acquiring a knowledge of his profession will at the same time become familiar with the superstitions and caste prejudices of the natives, and with their language;—objects of some importance in commanding extensive and successful practice, particularly, should he select any one of the large Indian Cities as the sphere of his practice. These qualifications together with the Diploma

of the Royal College of Surgeons of England will give the Indian Surgeon advantages over the European, and will more readily enable him to form a paying connection with the natives of this country, provided he is content to work at a *reasonable rate.*

It is also in contemplation to make certain improvements in the standard of preliminary qualifications required of candidates applying for admission into the Subordinate Medical Service ; one of which we believe will be, that the candidates shall be required to possess an ordinary acquaintance with Latin ; many of the lads entertained within the last 2 or 3 years are possessed of this qualification. This reform will secure for the service young men of superior attainments ; we, now in the service, must each and all exert ourselves to keep pace with the times, or we will most certainly find ourselves in the back ground, when the day comes, and come it must, that higher appointments of responsibility and trust will be given to the best qualified.

As regards the medical qualifications of our brethren we are confident that very few indeed will be found wanting—but we have our fears in respect to literary attainments. We do not presume to give ourselves any superiority upon this head, nor have we come to the conclusion that an improvement in this respect is required on our own judgment alone, it is the opinion of one who has always taken a warm interest in the welfare of the Subordinate Medical Department, and we sincerely trust that these remarks will be taken in good part.

---

Wong Fun a native of Hong Kong, a veritable Chinaman lately gained the first prize in the junior division of Professor Balfour's class of Botany at the University of Edinburgh.

---

We regret to announce the death of 2nd Dresser Nineapah. This unfortunate individual embarked for Rangoon on board the "*Successor*" the day previous to her being wrecked. By this

calamity it is reported that about 60 souls were lost within a few yards of the shore, and amongst the number the ill-fated Nineapah.

---

In our selections will be found a review by Dr. MacLean of Hydrabad of an article in favour of Homœopathy which appeared in No. 33 of the *Calcutta Review*.

We do not intend to inflict upon our readers a diatribe upon Homœopathy for we have had the subject presented to us in the periodical literature of the day over and over again "*ad nauseam*" and we are heartily tired of it. Our Indian tilt on the subject however is something new, and as the ground taken up by both parties is the statistical, we think that the admission of the extract will be appreciated by those who desire to see such a subject treated soberly, honestly and successfully.

From the authorized list of the homœopathic practitioners in medicine, it appears that there are about 50 in London and 70 or 80 in Great Britain and Ireland, and a few of them are men of ability such as Doctors *Henderson, Russell, Drysdale* and *Madden*. Many of them are men who make distinguished homœopaths now, tho' they were but poor allopaths formerly; and a few, like Mr. Blake of Taunton, the homœopathic practitioner, deal in dots where formerly they dealt in pies and tarts.

Homœopathy however is not a unity—dissent has split the body. There is now the *allopathic homœopath*, the *ultra homœopath*, and the *Isopath*. There is then we say the allopathic homœopath, such as Doctors Henderson and Madden, who use the *rational* system when the globules fail—such gentlemen use rational medicine as an auxilliary to the homœopathic, and are regarded as latitudinarians. Theultra homœopath again is a martyr to the truth—he is always calling out for justice, and appealing to the public, never to the profession, he believes in the potential effects of shakes, and his calculations defy all the powers of ordinary arithmetic. The Isopath is a schismatic from the great Hahnemannic code, he denies the *similia similibus* and

says that the principle is "*æqualia æqualibus curantur*" but let these gentlemen speak for themselves.

"Stapf, while admitting the facts of isopathy, alleges, that they do not speak for *æquale* but *simillimum*; he thinks homœopathy is thereby enriched. He does not very well like the application of the process to other morbid products than those of contagious diseases, and considers we should only use the morbid product for the patient from whom it was taken, and hence such products should not be kept as medicinal preparations. Hahnemannis very cautious on the subject; he will not altogether deny the power of isopathic preparations—especially psorine ['potentized' itch-matter] but will not admit the practice to be anything but a kind of homœopathy. Helbig rejects isopathy *in toto*. Rau dislikes it, but will not deny its efficacy altogether, at least in contagious diseases. Thorer sees, in the isopathic preparations only *simillima* not *æqualia*, limits its employment to contagious diseases," &c.*

"The person mentioned above as having potentized his blood, did the same by his tears, and let his son smell the preparation, who forthwith was affected with pain in his lachrymal gland. The evacuations, both upwards and downwards, of cholera patients have been 'potentized.' To get scarlatinine, milk-sugar was tied on to the body, and to obtain morbilline, measly patients held globules in their hands. According to Attomyr, 'potentised' itch-matter (psorine) developed lice in the head of a healthy person who proved it. Teeth affected with caries, and the matter from fistulous ulcers, were potentized, and termed *caries dentium* and fistuline. Other curious matters that have been 'potentized' by our isopathists are, ascarides, lumbrici, tape-worms, the water from dropsical swellings and hydroceles, the expectoration of phthisical patients." &c †

This new "*pathy*" is a return to the nastiness of former times when drinking urine and swallowing placentas were among the therapeutic efforts of the day; we can furnish experimentalists in England with any amount of "psorine," "leprine," "cholerine" they may judge it requisite to possess, but we decline submitting ourselves to the ordeal illustrating their therapeutic effects.

One remark and we have done—the term "*allopathy*" does not express the principles upon which our science and art are founded, and consequently all practitioners of rational medicine are bound to repudiate it.

---

* British Journal of Homœopathy, No. 29, p. 383.

† British Journal Homœpathy, No. 28, p. 338.

# PART FOURTH

## SELECTIONS,

## LECTURES ON DIGESTION, RESPIRATION, AND SECRETION,

## GIVEN AT THE ROYAL INSTITUTION,

## TO THE MEMBERS AND TO THE PUPILS OF ST. GEORGE'S HOSPITAL.

BY H. BENCE JONES, M. D., F. R. S.,
Physician to St. George's Hospital.

(Continued from Page 364 Vol. I)

### ON THE CHANGES WHICH TAKE PLACE IN THE NON-NITROGENOUS ORGANIC SUBSTANCES, AS STARCH, SUGAR, FAT, OUT OF THE BODY.

In my previous lecture, gentlemen, I showed you some of the changes which, out of the body, albuminous substances can undergo, partly by the influence of acids and alkalies, partly by the influence of other bodies themselves undergoing change, as in the instance of amygdalin and emulsin, and partly by the action of oxygen. I come now to show you the influence of the same agents upon the second great class of organic substances—substances which contain no nitrogen.

*Composition of Non-nitrogenous Organic Substances.*

| | | | | | | |
|---|---|---|---|---|---|---|
| Muscle Sugar..... | $C_{12}$ | $H_{12}$ | $O_{12}$ | + | 4 | HO |
| Grape Sugar..... | $C_{12}$ | $H_{12}$ | $O_{12}$ | + | 2 | HO |
| Cane Sugar..... | $C_{12}$ | $H_{11}$ | $O_{11}$ | | | |
| Starch..... | $C_{12}$ | $H_{10}$ | $O_{10}$ | | | |
| Dextrin..... | $C_{12}$ | $H_{10}$ | $O_{10}$ | | | |
| Milk Sugar..... | $C_{10}$ | $H_9$ | $O_8$ | | | |
| Valerianic Acid..... | $C_{10}$ | $H_8$ | $O_3$ | + | | HO |
| Butyric Acid..... | $C_8$ | $H_7$ | $O_3$ | + | | HO |
| Mannite..... | $C_6$ | $H_7$ | $O_6$ | | | |
| Lactic Acid..... | $C_6$ | $H_5$ | $O_5$ | | | |
| Acetic Acid..... | $C_4$ | $H_3$ | $O_3$ | + | | HO |
| Formic Acid..... | $C_2$ | | $O_3$ | + | | HO |
| Oxalic Acid..... | $C_2$ | | $O_3$ | + | | HO |
| Carbonic Acid..... | C | | $O_2$ | | | |

This Table shows you the composition of these non-nitrogenous organic substances, and it gives the relative proportions of their ingredients, namely carbon, hydrogen, and oxygen. It also shows their relation to carbonic acid. The composition of all is so far identical that they contain no nitrogen.

If these non-nitrogenous substances are acted on by oxygen to the further degree, we determine the proportion of the elements which they contain, by collecting the carbonic acid and water thus produced. This is the ordinary method of making an organic analysis; the method, indeed, by which these numbers were determined. When these substances are oxidized to the furthest degree, there is a formation of carbonic acid and water, and nothing else; these being the ultimate products of the action of oxygen upon non-nitrogenous organic elements.

Before bringing before you other changes less extensive and complete than the formation of carbonic acid and water, it is well I should show you by what test I can recognise the presence of these non-nitrogenous bodies, and how we can tell when they have undergone changes or remain unchanged. It is sufficient to determine the proportion of the carbon, hydrogen, and oxygen which they contain; this is nearly the same in all; some, indeed, do not differ at all in actual atomic composition, but in their chemical re-actions and relations they are totally different.

The best example of all, and the first of these bodies which I shall bring before you, is starch. It occurs the most constantly in the vegetable kingdom, and it is that substance which is of the most consequence to us; for probably, from it the other non-nitrogenous substances of which I have to speak in this lecture arise. What, then, are the means by which we can determine the presence of starch in any solution? We have a most beautiful and delicate method! I have here a solution of starch. If I add to it some free iodine, I get immediately an intense blue colour. It is a more delicate test to add a solution of hydriodate of potash. A few drops of a dilute solution are sufficient to determine the presence of starch, provided the iodine is set free, which can be done by chlorine water, and, far better, by means of dilute hydrochloric acid and nitrous acid. If I add very dilute hydrochloric acid to the starch and iodide of potassium, there will be no perceptible change produced; but if I add, in addition, the smallest quantity of any nitrite—as, for instance, nitrite of potash,—it immediately acts upon the hydrochloric acid, and the smallest possible traces of starch can thus be detected by the blue colour which is produced. For this beautiful test we are indebted to Dr. Price.

Closely related to starch is a substance called *dextrine*. It is produced from starch by merely heating it, and by acting upon it by many

chemical agents. The composition of dextrine is precisely similar to that of starch ; but it is totally different in its chemical re-actions. If I take, for instance, a mixture of starch and water, and boil it for a short time, the starch will not become perfectly clear and soluble, but will become gelatinous, and remain in the form in which you see it. Dextrine, on the contrary, is perfectly soluble in water,—starch is insoluble ; and we see the important end which is obtained by the insolubility of starch,—it withstands the action of the rain,—it cannot be dissolved and washed away from the plants in which it is found. Let me show you how different in its re-actions this dextrine is from starch, I will add some water to a solution of it ; and then I may show you that it differs from starch by repeating the former experiment. You will see that, on adding iodine, or on setting it free from hydriodate of potash, a distinct red colour is produced in place of the blue. These differences are of great importance in reference to the absorption of starch ; for starch, as long as it is insoluble, cannot be taken up into the vessels ; but, when it is converted into dextrine, it can be absorbed with the greatest facility. When starch is acted on by mineral or vegetable acids it speedily looses its consistency, and becomes thin and limpid, as you see in this flask, in consequence of the formation of dextrine. The experiment is made best by sulphuric or oxalic acids, for they can be afterwards separated by lime, the sulphate or oxalate of lime remaining on the filter, whilst the solution of dextrine passes through. When the ebullition with the dilute acid is long continued, the dextrine undergoes a further change into grape sugar. The time requisite depends on the quantity of acid present. Fifteen parts of starch, sixty of water, and six sulphuric acid, require four hours boiling. Nitric acid converts starch into oxalic and malic acids. Dilute alkalies have no action on starch. Let me now say a few words on the tests for different kinds of sugar. There is a great difference in the chemical re-actions of sugars, though there is the closest agreement between them in compositions. It is of great importance to be able to determine and detect the different kinds of sugar, to be able to tell when they are present in a body or not. Of all the tests of sugar, the most interesting and important is that of sulphate of copper and liquor potassæ, which I have brought before you already. When these acts upon different kinds of sugar, they produce very different results. If I take cane-sugar, existing in the purest state as sugar-candy, and

treat it with sulphate of copper and liquor potassæ, I get a certain result; but with grape-sugar the same re-agents produce entirely different re-actions. If I take cane-sugar in a pure crystalline state (I do not use lump sugar, as it may contain grape-sugar)—if I take a solution of sugar-candy, and add a very dilute solution of sulphate of copper and liquor potassæ, even before the liquid is heated you will see that it assumes a beautiful blue colour. If I boil it for a few moments, no change will be perceived if the sugar is perfectly pure; but if, instead of cane-sugar, I take grape-sugar, which differs slightly in composition, and treat it in the same way, the same blue colour will at first be seen; but if I heat it a change rapidly takes place; the sugar takes away some of the oxygen from the oxide of copper, and the result is the formation of a sub-oxide, which falls as a beautiful red precipitate. If I had boiled the cane sugar and sulphate of copper with liquor potassæ long enough, I should also have got a reduction of the oxide of copper. Hence it is the rapidity with which the change takes place that constitutes the value of this test. These two kinds of sugar differ also in other things besides the re-action produced by sulphate of copper and liquor potassæ. I have here two tubes, one containing a solution of cane-sugar, and the other a solution of grape-sugar, and I will try the action of sulphuric acid on both. If I add sulphuric acid to the cane-sugar, and agitate it for a few moments, you will see a darkening commences and rapidly increases, until a blacking-like mass of foam is formed; while, with the same treatment, the grape-sugar is scarcely affected. In the one case there is quite a violent action, evidence by the heat and charring which are produced; and, in the other no such action whatever occurs. This does not depend on the strength of the solution, but on the kind of sugar used. Let me show you the difference in the action of liquor potassæ on these two sugars, that you may see how differently alkalies act on these substances. Look how the grape-sugar is acted upon by the alkali with great intensity, while the cane-sugar is scarcely acted upon at all. Liquor potassa, you know, is used as a test for sugar. It is a tolerable test for a grape-sugar, but no test at all for cane-sugar. (Experiment.) In this case the action of the liquor potassa is the reverse of that of the sulphuric acid; one acts on the cane-sugar intensely, and the other on the grape-sugar.

The ease with which the cane-sugar is changed into grape-sugar is also worthy of notice, and can be easily shown. I have here a solution

of cane-sugar, and you know what happens if I mix it with sulphate of copper and liquor potassæ, and apply heat; no reduction will take place quickly. But, if I add a drop of sulphuric acid to the solution of cane-sugar and boil it for a second, and then apply the copper test, the reduction takes place as with grape-sugar. I have here two solutions of cane-sugar, one with sulphuric acid and one without it. If I boil the solution to which sulphuric acid is added—and it does not require much boiling—the change will rapidly take place. And now let me apply my test,—the sulphate of copper and liquor potassæ, or, to avoid diluting it too much, a little potassa fusa and sulphate of copper. The solutions, you see, become beautifully blue, in the one case as in the other case. But if I boil the two solutions, the re-actions will be different. If I boil the solution to which sulphuric acid has been added, you will see an immediate reduction will take place, and the change into grape sugar will become apparent. If I boil the other solution no change will occur, because no grape sugar is present.

Thus we have a method of detecting the presence of starch, dextrine, and sugar. We can now trace some of the changes which take place in these substances out of the body; the change, for instance which takes place in germination. The difference between barley and malt is represent in my diagram. The starch of the barley has under-

*Relation of Barley to Malt.*

| | Barley. | Malt. |
|---|---|---|
| Starch | 598 | 431 |
| Gluten | 57 | 12 |
| Albumen | 4 | |
| Diastase | | 2 |
| Sugar | 46 | 154 |
| Gum—dextrine | 44 | 150 |
| Oil | 4 | 4 |
| Salts | 5 | 5 |
| Husk | 136 | 136 |
| Water | 106 | 106 |
| | 1000 | 1000 |

gone a change, and an increase has taken place in the sugar and gum. What happens, then, when this malting takes place? Here is the body known by the name of *diastase.* There is no diastase in barley; but it is produced in malt. There is less albuminous substance in malt than in barley, and diastase is produced out of the albumen by the ope-

ration of malting, and it is this substance which is the active agent in setting up the change of the starch into sugar. It acts most energetically at a temperature of 140 to 150 Fahr.; at this heat one part of diastase will convert two thousand parts of starch into sugar. Starch, then, can be changed into sugar simply by the action of malting. Even when a pile of grain is heaped up, and a certain temperature produced, part of the starch will undergo change, and some sugar will be produced. This is owing to the action of the albumen,—a substance closely related to, though slightly differing from, diastase. Its action is, without doubt, similar to that of synaptase, or emulcin, on amygdalin. Diastase produces no action on sugar, gum, or gluten; its special action being, as I have said, on starch.

Another remarkable change which non-nitrogenous organic substances can undergo is seen in fermentations, the action of yeast upon sugar. Yeast is a substance of an albuminous character, and is somewhat similar to diastase. When it is mixed with a solution of sugar and kept at a certain temperature, you know what happens. The result is mentioned in my diagram. Simply by this action of the ferment the sugar is divided into alcohol and carbonic acid.

*Alcoholic Fermentation.*

| | | | | | |
|---|---|---|---|---|---|
| Carbonic acid | 4 | equivalents | $C_4$ | | $O_8$ |
| Alcohol | 2 | „ | $C_8$ | $H_{12}$ | $O_4$ |
| Grape-sugar | 1 | „ | $C_{12}$ | $H_{12}$ | $O_{12}$ |

That carbonic acid is produced, I can show you by an experiment, in which the bubbles of carbonic acid gas rise through lime-water, which is thereby rendered milky. This action of yeast is similar to that of the diastase, though both are called catalitic actions, yet little of the real nature of the action is, at present, known to us. If time permitted, I might go into other details of this fermentation. I may here only allude to a beautiful experiment which, if conducted with care, gives a very satisfactory result. I have a wide glass tube, open at both ends, a piece of muslin is tied over one end, and it is then put into a solution of sugar. Within the tube, resting on the muslin, some yeast is placed with care; we have then two solutions, separated only by a piece of muslin, which prevents the escape of the yeast from the one solution into the other. In the inner fluid, which contains yeast, fermentation

goes on : but in the outer fluid, which is separated by muslin only, so that the yeast cannot pass through, no fermentation takes place. (Experiment.) Hence this action of fermentation arises from the contact of each particle of sugar with a particle of the yeast; indeed, it has been called the *contact action.* This, however, is a mere statement of the case, and is no explanation of the action whatever. The experiment beautifully illustrates how the action is not propagated by the contact of one particle of sugar with another particle of sugar. The liquid within and without is clearly continuous; the difference being only that the yeast does not touch the outer fluid, whilst it does touch the inner one ; setting up the fermentation in one case, but not in the other.

Yeast does not always give rise to carbonic acid and alcohol. If, for instance, I take some yeast in this flask, and boil it with water, and then put it with sugar to ferment in the warmth, I scarcely get a trace of alcohol or carbonic acid; but I get a highly acid body produced, lactic acid, and a substance which is known as mannite ; these are formed in consequence of the yeast having been boiled. Mannite and lactic acid, as you see, contain the elements of try grape sugar, if one equivalent of oxygen be separated from it.

| Grape-sugar | — | Oxygen | = | Mannite | × | Lactic Acid. |
|---|---|---|---|---|---|---|
| $C_{12}\ H_{12}\ O_{12}$ | — | O | = | $C_6\ H_7\ O_6$ | × | $C_6\ H_5\ O_5$ |

In its usual state, the yeast would have set up an alcholic fermentation ; the boiling is sufficient to deprive it, not of all but of some of its activity. So, also, it is found that azotised albuminous substances,—putrid blood, white of egg, or the membrane of the stomach of the calf, for instance, in an advanced state of putrefaction,—will act as less energetic alcoholic ferments ; but in an early stage of decay they possess the forming, not alcohol and carbonic acid, but lactic acid. So, also, the azotised matter of malt, when suffered to putrify in water, in a few days acquires the power of converting sugar into alcohol. The gluten of grain behaves in the same manner. Wheaten flour, if left four or five days in a warm situation, will become an active ferment, producing lactic acid. If left still longer, it produces alcohol and carbonic acid. Casein is remarkable for its power of changing sugar into lactic acid, by mixing two gallons of stale milk, six pounds of sugar, twelve pints of water, and four pounds of chalk, to a creamy consistency. The mixture requires generally to be left in a loosely covered vessel, exposed to a temperature of 60° or 70° Fahr. for about two weeks.

Then the whole of the lime will be converted into lactate of lime, which can be thus obtained in unlimited quantities. If exposed to a higher temperature, and for a longer time, the action of the casein ceases to form lactic acid, but gives rise to butyric acid. Professor Scheerer relates the following interesting experiment. Having put a mixture of cane-sugar, cheese, chalk, and sour milk together, and left them in a tolerably warm place, on purpose to produce lactic acid, lactic acid fermentation soon took place, and a quantity of lactate of lime was produced. The residue was left to undergo what he expected would be butyric fermentation. He wanted butryic acid, and he left the mixture for a further change. After some weeks, he went to it, in the expectation of finding butryic acid; but he found nothing else than acetic acid, and also a certain quantity of formic acid,—a body which I mentioned in my lecture on the albuminous substances.

Before leaving these products of fermentation, let me remind you of the substance produced by the partial and complete action of oxygen on these products of fermentation. Alcohol, when dropped on spongy platinum, gives rise, as you know, to acetic acid. If wine containing a small quantity of alcohol is left to stand in the air, with a little yeast mixed with it, the spirit of the alcohol quickly disappears, and in its place acetic acid is produced. If my alcohol, instead of burning slowly but completely, so as to form carbonic acid and water (its ultimate products of combustion), is allowed to burn imperfectly, I have certain acids produced,—acetic acid, formic acid, aldehyde, and aldehedic acid. Other alcohols give diffetent acids. Wood spirit, which is methyle alcohol, if dropped on platinum, give rise to formic acid. If we take potato oil, which may be looked upon as another species of alcohol, and oxidise it, it gives rise to valerianic acid, which, you may remember, was one of the products of the decomposition of albuminous substances. Thus valerianic acid can also be produced from the nitrogenous as well as from the non-nitrogenous class of substance. If I oxidise all these substances completely, the result is the same,—carbonic acid and water,—imperfect oxidation giving rise to the acids I have mentioned.

Thus I have tried to bring before you some of the changes which take place in starch, sugar, and acids. I must shortly mention some changes which take place in oily substances, which form another great subdivision of the class of bodies included under the term non-nitrogenous

organic substances. Oils and fats consist of one or more fatty acids, combined with a neutral substance called glycerine, though not exactly as simple compounds. Out of most oils and fatty matters, either oleic acid and glycerine, margaric acid and glycerine, or stearic acid and glycerine, can be obtained. The relation of these acids and the composition of glycerine is presented in this table :—

*Composition of Fatty Acids and Glycerine.*

| | | | | | |
|---|---|---|---|---|---|
| Stearic acid ... ... | $C_{68}$ | $H_{66}$ | $O_5$ | 2HO |
| Margaric acid ... ... | $C_{34}$ | $H_{33}$ | $O_8$ | HO |
| Oleic acid ... ... | $C_{36}$ | $H_{33}$ | $O_3$ | HO |
| Glycerine ... ... | $C_6$ | $H_8$ | O | |

If I take olive oil, for instance, and act upon it with caustic potash, I can separate it into oleic acid and glycerine. (Experiment.) The oleic acid of the olive oil combines with the potash to form a sort of soft soap. If I heat oil, or any other fatty matter, with caustic potash or caustic soda, I get a soap produced by the combination of the fatty acid with alkali, the glycerine being set free. That such an action actually takes place, can be made very clear. If in this test tube I heat this potassa fusa with olive oil, I shall find the latter loses all its properties of oil by being acted upon by the potash. The oleate of potash becomes soluble in alcohol. The solution, if mixed with any salt of lime, is decomposed ; from the soluble oleate of potash, an insoluble oleate of lime is produced. I can show you this re-action by pouring my alcoholic solution into spring water ; a milkiness, which indicates the hardness of the water, is produced. If I pour the alcoholic solution into distilled water, no precipitation occurs. In my test-tube a soap-making process is going on, and the bodies are acting energetically on one another, so that I have a solid mass of oleate of potash formed, all the oil having undergone a change, being decomposed into the oleic acid, which combines with the alkali to form an oleate of potash, leaving the glycerine free. If I take the fatty matters existing in butter, I shall get somewhat different fatty acids, the volatile acids of butter, of which I showed you the composition in my third lecture. The decomposing action of the potash is totally different from the mere subdivison of the fat which takes place when it is agitated with alkali and water ; and this is of importance for me to mention in reference to a future lecture. If I take a little olive oil and mix it with dilute

liquor potassæ (a solution of potash in water), and agitate them, I get a certain emulsion produced. This will take place in the cold, but no decomposition will ensue until the mixture has been boiled for some time. The mere division is of the greatest possible importance in reference to the question of digestion; and it is very necessary that you should understand the difference between the chemical change which ensues in the formation of soap and the mechanical subdivision in the formation of an emulsion, if you are to understand the recent views on digestion which I shall have to mention. The fine division of fatty substances is, as I have said, of great importance. It takes place easily with all these alkaline bodies, and even with some salts and with albumen, but this subdivision is very different from the actual decomposition of the fatty matter and the formation of those chemical compounds which we know as soaps.

I would, if time permitted, show you some more of the changes which these fatty substances undergo. All of them, if burnt, give carbonic acid and water. Glycerine also gives these products when burnt; and if it be left to the action of yeast, at 68° to 86° Fahr., gives rise to an acid called metacetonic acid. It can also probably give give rise to lactic acid; with strong nitric acid it gives carbonic acid, oxalic acid, and water. By hydrochloric acid and oxide of manganese it gives formic acid.

| Glycerine | × | Water | = | Metacetonic acid. |
|---|---|---|---|---|
| $C_6$ $H_5$ $O_3$ | × | 2HO | = | $C_6$ $H_7$ $O_5$ |

Thus I have attempted to bring before you some of the changes which take place in non-nitrogenous organic substances out of the body. Generally, I may state, that these changes are produced first by the contact of these substances with the nitrogenized bodies as yeast, diastase, emulsion, &c., which themselves are undergoing changes; that the second great cause of change is the action of oxygen; and that lastly there is the action of acids and alkalies. In the body albuminous substances in a state of change are always present. The action of the oxygen inspired never ceases. The alkaline saliva and pancreatic fluid, and the acid gastric juice, these, also, by their chemical properties of alkalescence and acidity, act upon the starch, sugar, and fat, which we take as food. How far these acids, alkalies, and

ferments are concerned in the process of digestion within the human frame I shall endeavour to show you in the following lectures.—*Medical Times, May* 17, 1851.

*(To be continued.)*

---

ARTICLE I.—*Why is a true Corpus Luteum formed (normally) only when Pregnancy occurs?* By ALEXANDER HARVEY, M. D., Physican to the Aberdeen Royal Infirmary, and Lecturer on the Practice of Medicine in the University and King's College of Aberdeen.

Before proceeding to consider the answer to the question placed at the head of this paper, the five propositions following may be premised:—

1st, That the assumption on which the question proceeds is a valid one,—at least to this extent, that (in the natural state) it is only when pregnancy occurs that the corpus luteum attains the full size, and passes through the whole series of change described by Dr. Montgomery and others as characteristic of the *true,* in contradiction to the *false,* corpus luteum.

2d, That at each monthly period in the human female, a mature ovum makes its escape from the ovary; and that its becoming impregnated or remaining unimpregnated depends simply, speaking generally, on its meeting, or failing to meet, with the seminal fluid at the proper time or place.

3d, That whether the ovum be thus impregnated or not, the *elements* of a true corpus luteum exist in the ruptured ovisac of every such ovum,—viz., a deposit of organised and still farther organisable matter.

4th, That this matter having, on the escape of the ovum, already, fulfilled its destined office, its organisable power is *feeble,* and its tendency towards *atrophy and decay* greater than that towards *farther growth and development;* and, this being so, that its development into a perfect ("true") corpus luteum is *contingent* on certain accessary circumstances *extrinsic* to itself.

5th, That during certain states of the system of which pregnancy and lactation are notable examples, there is, along with suppression

of the menses, a suspension of the maturation of ova, and of the escape of mature ova from the ovaries,—these processes, however, being resumed, concurrently with the re-appearance of the menses, on the subsidence of those states of the system.*

Of these propositions the first, at least in the qualified form in which it is advanced, will not now be disputed by any one; and the second and third will be allowed by every one acquainted with the present state of our knowledge on the subject, to be at least in the highest degree probable. The fourth, on which the answer to the question proposed more immediately turns, seems to be a fair inference from proposition third, and from the known history of the matter there referred to; and the fifth, which bears on certain objections that may be urged to the sufficiency of the answer to be given, also appears to be a legitimate inference from known and admitted facts.

It may next be observed, that, while much has been written on the distinctive characters of *true* and *false* corpora lutea, and on the nature of these bodies generally, no writer (so far as the author can discover), with the single exception of Dr. Carpenter, and that only in his "Manual of Physiology," and there very briefly,—no writer has ever proposed much less discussed, the question which forms the subject of this paper. Müller, at least, and Wagner, Carpenter in his "Principles of Human Physiology," Kirkes, Alison, Allen Thomson, Mayo, Bostock, and Dunglison, make no reference to it; and even Dr. Montgomery and Dr. Baly, who have written largely (and the former very expressly) on the subject of the corpus luteum, pass it over in silence. That the question should not have presented itself to the minds of certain of these physiologists need not be matter of surprise; but it does seem to the author somewhat surprising that it should not have suggested itself to those in more recent times, who acknowledge as physiological truths the second and third of the propositions advanced above. And yet it

* If this proposition be correct, a more definite, and probably a more accurate, idea may be formed both of the pathology of amenorrhœa and of the therapeutics of emmenagogues. Excluding certain special and rare cases of that disease, and having regard to the ordinary and much more frequent cases, it may be maintained that amenorrhœa is essentially dependent on morbid *constitutional* states, which prevent the maturation and discharge of ova; and that emmenagogues owe their efficacy, not to any specific action they may exert on the uterus or ovaries, but to their correcting those constitutional states,—on the subsidence of which states, the maturation of ova, and, concurrently with this the process of menstruation, are *naturally* or *spontaneously* re-established.

will perhaps be admitted on a little reflection, not only that it is a question naturally arising out of the propositions just referred to, taken in connection with the known history of the matter spoken of in proposition third, but that a satisfactory answer to it would probably throw light on other and important but controverted questions relative to the corpus luteum, or at least serve to give greater precision to our estimate of the value of that body as an evidence of pregnancy.

Now, assuming that the positions which have been laid down are all of them correct expressions of matters of fact, there seems but one way of accounting for a "genuine" or "true" corpus luteum being formed when pregnancy occurs, and not being formed when this does not happen; and the true account of the matter appears to be this:—

(1.) When a mature ovum is impregnated, provision is forthwith made for its being retained in the uterus; and both the ovum and the uterus becoming the seat of peculiarly active vital processes—which are to extend over many months—an active, sustained, and prolonged *determination of blood* takes place towards the uterus and its appendages. The ruptured *ovisac* participates in that determination and in the tendency to growth given by it; the *organisable* deposit which it contains is thereby placed in circumstances favourable to the exercise of its own inherent power of growth; and thus circumstanced it grows, and is developed into the full-sized, ripe, or "true" corpus luteum.

It is no objection to this view, that the body in question may attain its full size within the second or third month of pregnancy, then remain stationary for a time, and after that begin to atrophy (all which it seems to do) notwithstanding that the external conditions of its growth continue the while in full activity and unchanged—may, perhaps, increase with the advance of pregnancy. It seems sufficient to observe, that, indispensable as these conditions are to its development, it may have and probably has (in common with almost every organisable substance) its *own* law of growth, and that the *law* determines the extent of its development, and the several changes, whether of increase or decrease, which it passes through. And thus, although the circumstances favouring its continued growth obtain, no further increase goes on after it has reached a certain size. It may be remarked, however, as showing that these are still not without their influence on its condition (and, indeed, it may be added, as indirectly but very

strongly supporting the view here taken of the cause of formation of the "true" corpus luteum), that it is not until *after* delivery, when all the vital processes connected with the (associated) ovum are completed, and the extraordinary determination of blood thereby created in all parts of the generative organs ceases, that the corpus luteum begins *rapidly to disappear;* that when inflammation attacks the uterus during the *post-partum* state, and the determination thereto is *renewed*, the size and *vascularity* of the corpus luteum *are preternaturally augmented* (see Montgomery, "Signs and Symptoms of Pregnancy," pp. 225, 227, and Plate XI., Figs. 5 and 6); and further, and very particularly, that on the occasion of an *abortion*, when the vital processes are cut short, and the requisite determination ceases much earlier than usual, the decay of the corpus luteum is proportionally *early* (Montgomery, op. cit., p. 227). In proof and illustration of this last observation, it may be stated, that, supposing two women to conceive on the first day of January, and to die on the first day of November thereafter, but the one to have *aborted* on the 1st of April, and the other to have been *delivered* on the 1st of October,—there would be found in the ovary of the former slight traces only, if any, of the corpus luteum; in the ovary of the latter, very manifest traces of it.

(2.) On the other hand, when the ovum is not impregnated, it becomes blighted, and is thrown off from the generative organs. No cause of preternatural determination of blood to the uterus existing, no such determination takes place; and the organisable deposit within the ruptured ovisac, having no great inherent power of growth (Prop. 4), and not being placed in circumstances favourable to the exercise of this, either fails to grow at all, or grows only (although very rarely) to the extent characteristic of a "false" corpus luteum.

It might be supposed, indeed, in this case, that the periodic monthly excitement of the ovary would attract sufficient supplies of blood to enable that deposit to grow. This excitement, however, is essentially *transient*, continuing only for few days at each time—a period much too short for the deposit to make any tolerable progress towards development, if, indeed, its power to do so be not *lost* in the *interval* that elapses between the escape of the ovum and the next monthly renewal of the excitement.

The answer now given to the question proposed agrees with the statement made by Dr. Carpenter as to the cause of the difference in the

changes which the deposit in question undergoes, according as the ovum is or is not impregnated. "The escape of the ovule from the ovarium involves processes which are essentially the same, whether it be impregnated or not; but the subsequent changes differ in the two cases, so that the corpus luteum which accompanies the pregnant state is a much more highly organised body than that which is found in the ovary of the unimpregnated female. *This difference may be due, in part, to the absence, in the latter case, of that special determination of blood to the genital organs which takes place in the former.*"—("Manual of Physiology," p. 462.) Dr. Carpenter would perhaps be willing to cancel the qualification "*in part*," or at least to substitute for it the word *probably*,—the expression "in part" implying that *another*, although *unknown*, cause, and *because* unknown possibly (on the principle of "omne ignotum promagnifico") a more *influential* cause, may be concerned in the production of the difference.*

On the principles now stated, it might be expected (seeing that a mature ovum is thrown off every month) that *any* condition of the uterus and its appendages, *besides* pregnancy, which can produce and keep up an active determination of blood to these parts, should, equally with pregnancy, be attended with the formation of a true corpus luteum. It may be remarked, however, that it is but rarely that the conditions requisite for such an occurrence can reasonably be expected to obtain. For, in the first place, *most* states of the uterus and its appendages tending to create such a determination are probably attended, even from the outset, with a *suspension* of the maturation of ova and of the menstrual secretion (Prop. 5); and, in the second place, *few* morbid conditions of these parts are of so active a character, or accompanied by so vigorous, and sustained, and complete a determination of blood, as are the processes attendant on pregnancy. Therefore, while the presence of a true corpus luteum in the ovary of a virgin, who had died of such disease of the uterus or ovarium as had been accompanied during life with decided and prolonged determination towards these organs, would be in keeping with the view here given of the formation of that body, its *absence* could not be regarded as a sufficient objection to the soundness of that view; and accordingly, while the

* This substantial coincidence of sentiment is the more satisfactory to the author, that his own opinion was formed, and expressed in his lectures on physiology, before the publication of Dr. Carpenter's Manual.

reason will appear for the introduction of the word "normally" into the question now discussed, the occasions are probably very few in which our estimate of the value of the presence of a true corpus luteum, in relation to the question of pregnancy, could be at all affected. It is clear that the circumstances under which a well developed or true corpus luteum could be formed, independently of pregnancy, must be such as to produce a condition of the uterus and its appendages, and of the circulation through them, corresponding more or less exactly to that attendant on pregnancy; and it may be confidently asserted, that such is not the ordinary history of any known disease of these parts,—*e. g.*; of ovarian disease, malignant disease, fibrous or other tumours, &c.,—while as already observed, most diseases of these organs involve an *early arrest* of the menstrual discharge and of the maturation of ova.

Although the formation of a true corpus luteum, as consequent on the pregnant state, has here been referred to the *determination of blood* attendant on that state, it would perhaps be physiologically more accurate to regard it as an ulterior or incidental result of the *increased vital action* going on in the uterus and its contents, and by which the determination in question is itself maintained. That the ovaries, although they have no part to play in that vital action, should be indirectly influenced by it, and participate in the excitement existing in their immediate vicinity, would be no ways more remarkable than the fact of the mammæ then doing so,—organs remotely situate from the uterus, and, having during the pregnant state nothing to do with the processes then in operation. Supposing this to be the more accurate explanation of the phenomenon, it may suffice to have thus briefly adverted to it.—*Edinburgh Monthly Journal, for Oct.* 1851.

---

## MIDWIFERY, &c.

### A NEW TREATMENT OF PROLAPSUS UTERI.

M. Desgranges, surgeon to the Lyons Hospital, has laid before the Academy of Medicine of Paris a new mode of remedying the uterine displacement. It consists in pinching up the mucous membrane of the vagina, after reduction, with little forceps, or "serres fines" of Vidal. The forceps produce ulceration, and fall off from the fifth to the tenth day; and M. Desgranges repeats this operation eight or ten times, taking care always to leave as many of the forceps as possible. At the

commencement of the treatment, he introduces as many as nine ; later, from six to four ; and at last, towards the end, only one of the little instruments. The treatment lasts in general two months and a half, or three months.

It will be seen that this method rests on the fact that the narrowing of the passage may prevent any further descent of the organ, the loss of substance and cicatrization being instrumental in the result. M. Desgranges adduces three cases in support of his views, and the operation might at first sight be looked upon as holding out a fair chance of success ; but it should be borne in mind, that by the contraction of the canal, none of the weight of the displaced body is diminished ; and that constant pressure from above may certainly conduce to the elongation of the cicatrices.

For assisting the memory of our readers, we shall just transcribe the various analogous operations which have been proposed, as given in a very good article of the *Bulletin de Therapeutique* :—

" 1. Excision of a few folds of the vaginal orifice, as practised by Dieffenbach, in imitation of Dupuytren's mode of excising some folds of the margins of the anus in prolapsus of the rectum.

" 2. Excision of a broad longitudinal flap of the mucous membrane of the vagina, either elliptical (Dr. Marshall) or square (Dr. Ireland), and the immediate apposition of the lips of the wound by suture.

" 3. Cauterization of the mucous membrane, so as to harden the tissues by suppuration, and obtain union between the walls of the vagina and the surrounding organs (Laugier),

" 4. Excision of a semi-circle of the vaginal orifice, and immediate apposition by suture, in acting either on the anterior or posterior circumference.

" 5. Episioraphy, practised by Fricke, of Hamburg. This consists in paring the inner surfaces of the labia majora, and bringing them together by suture.

" 6. Complete obliteration of the vagina, proposed by M. Romain Gerardin. This operation has never been practised upon the living subject, and could hardly be thought of before the cessation of the catamenia."—*Lancet*, 9th Aug. 1851.

ON OVARIAN IRRITATION. BY DR. FLEETWOOD CHURCHILL.

This affection resembles most closely sub-acute ovaritis, but differs from it in not being inflammatory. Age appears to have little in-

fluence in the production of the disease, and it is most frequently found in women of delicate nervous temperament. The principal symptom is an uneasiness, amounting in most cases to pain—in a few instances to very severe pain, in one or both iliac regions, but most frequently in the left, which Professor Simpson attributes to the propinquity of the left ovary to the rectum. It is accompanied with a sensation of fulness about the iliac region, considerable tenderness, occasionally hysterical paroxysms, and the irritation sometimes extends to the bladder. Nothing unusual is detected by a vaginal or rectal examination—the ovaries are certainly not enlarged, but uneasiness is produced by moving the uterus to the side affected. The different circumstances under which the attacks occur, are the following :—

I. Occasionally from amenorrhœa.

II. The sudden suppression of the catamenia.

III. Dysmenorrhœa, secondarily affecting the ovaries.

IV. Menorrhagia.

V. Congestion and erosion of the cervix uteri.

VI. In hysteria, both in the normal and abnormal states of the catamenia ; and,

VII. In sterility accompanied with a highly nervous temperament.

As to the pathology of the disease there can be no doubt, from the peculiar and fixed locality of the pain, and its frequent connection with menstruation, that the ovaries, one or both, are the seat of the irritation ; nor from the various symptoms can the conviction be resisted, that the affection is essentially neuralgic, and not inflammatory. It does not appear that ovarian irritation, although it may disturb the menstrual function in various ways, is the cause of menstrual disorders ; it is rather a concomitant symptom.

Cold, excess in sexual intercourse, and in some instances deprivation of that stimulus, and any of those causes calculated to disturb the functions of the uterus or ovaries, may be considered as among the causes of ovarian irritation.

It is to be diagnosticated from acute ovaritis, by the absence of enlargement, and by the tenderness present being much greater than that resulting from inflammation, being, in fact, of a nervous character.

It is to be distinguished from pelvic abscess by the want of tumefaction at the brim of the pelvis.

In the treatment of this disease, leeches to the ovarian region, followed by poulticing, and even warm poultices without leeches, small blisters, anodyne liniments, anodyne plasters and enemata, tincture of aconite, applied freely to the iliac region, have all been more or less followed with relief. But that which can be most confidently recommended to the profession, is opium applied to the upper part of the vaginal surface, made up in the form of medicated pessaries, similar to those used by Dr. Simpson, each ball about the size of a large marble, containing two grains of opium, half a drachm of white wax, and a half of lard. This has been tried in a considerable number of cases, and with almost invariable success.—*Abridged from a paper read before the Association of the College of Physicians of Ireland.*

---

## MEDICINE.

*On the Variations of the Sulphates and Phosphates excreted in Acute Chorea, Delirium Tremens, and Inflammation of the Brain.* By H. Bence Jones, M. D., A. M., F. R. S. &c., Physician to St. George's Hospital.

This is another of Dr. Bence Jones's elaborate contributions to the chemistry of the urine ; and gives the result of inquiries which have been prosecuted subsequently to his former communications to the Medico-Chirurgical Society and to the Royal Society, on the products of the oxidation of the muscular and nervous tissues. The determination of the amount of the sulphates and phosphates was made in 148 specimens of urine from 58 subjects ; the diseases to which most attention was given being *acute chorea*, as the type of the class in which the muscular structures chiefly were affected ; *delirium tremens*, as the type of functional disorders of the nervous centres ; and *inflammation of the brain*, as the type of acute structural diseases of the nervous system. A selection of the most interesting cases of each class is given by Dr, Jones ; we can only find room for the summary of results.

The phenomenon common to acute chorea and delirium tremens is increased and unceasing muscular action the result of which is an increase of the sulphates and of the urea in the urine; just as in health they would have increased if continued exercise had been taken. The phosphates were found to be diminished in acute chorea; but this diminution was not greater than could be accounted for by the complete abstinence from food. A still more marked diminution was observable in delirium tremens; and this, as remarked, by Dr. Jones on a former occasion, is too great to be thus accounted for, and seems to indicate that the irregular action of the brain is connected with *deficient* oxidation.* Dr Jones's continued investigation have confirmed him in the conclusion that in inflammation of the brain the phosphates are considerably increased; and they lead to the belief that the sulphates also are raised above the average amount. This is what might be expected, when it is borne in mind that the brain contains a considerable amount of albuminous as well as of fatty matters; and that the sulphur of the former will undergo oxidation, at the same time, and under the same circumstances, as the phosphorus of the latter.

---

*Experiments on Chylous or Chylo-Serous Urine.* By John Mayer, Assistant Surgeon to the Second Native Veteran Battalion. *With a History of the Patient.* By G. Pearse, M. D., Garrison Surgeon of Bangalore.

We are glad to receive from India so interesting a contribution to our knowledge of a rare affection, to which, it will be recollected, attention was particularly directed by Dr. Bence Jones in the preceding volume of the Society's Transactions. The subject of this case

* May not this be the direct result of the impregnation of the blood or of the nervous matter with alcohol? The experiments of Prout, Vierordt, and others, tend to show that the normal amount of carbonic acid expired is diminished for a time after the ingestion of fermented liquors, and then rises considerably; whilst many other observations agree in stating a venous hue of arterial blood as one of the results of their continual employment in large quantity; both sets of facts concurring to prove that the presence of alcohol in the blood tends to obstruct the elimination, by the oxidizing process, of the products of the "waste" of the system.—Rev.

was a young married woman, an Indo-Briton, aged twenty-two years, the mother of three healthy children, the youngest of whom, a particularly strong and healthy infant of ten months old, she was continuing to nurse at the time when she came under Dr. Pearse's care, though the supply of milk had latterly been scanty. Though tall and thin, her appearance was healthy; and, according to her own account, her general health was very good. When nursing her two elder children, which she had continued to do until they were fourteen or fifteen months old, she observed for some time previous to weaning them, that her urine had become white like milk, which peculiar appearance it lost soon after she discontinued nursing. During her third lactation, the urine assumed the white appearance when her infant was only five months old; and the medical officer under whose care she then was, observing that she was suffering from general debility, put her upon a course of tonics, and recommended that the infant should be at once weaned. The recommendation, however, was not attended to; and she continued to nurse for five months longer, when she was first seen by Dr. Pearse, having been sent to Bangalore (a distance of sixty miles) for change of air. The urine was then nearly as white as pure milk, and coagulated on cooling into a thick but not firm jelly; it was not unusual in quantity. When treated with a few drops of dilute nitric acid, it separated into a serum having a firm coagulum in the centre. The further examination of the fluid was placed in the hands of Mr. Mayer, whose results we shall presently give. The patient was caused to wean her child forthwith, and placed upon a course of sulphate of iron and quinine, with directions to be as much in the open air as possible. Two or three weeks subsequently, the urine was again examined, and although still retaining the milky appearance, it had more the aspect of healthy urine, and did not coagulate spontaneously until after it had stood for a long time undisturbed. The patient did not admit that there was anything the matter with her, save as regarded the condition of her urine; and being anxious to return home, she passed from Dr. Pearse's observation, so that he does not inform us whether, as on previous occasions the urine returned to its normal condition after the suspension of lactation.

Mr. Mayer's inquiries were particularly directed to the determination of the question, whether the appearance of the urine was due to an admixture of the components of *milk*, or whether it was rather to be attri-

buted to the passage of unassimilated *chyle* into the excretion. He found that on boiling, it gave a copious white precipitate, on the surface of which, when separated by filtration, a fatty-looking matter was observable, and the filtrate, when treated with acetic acid, did not give any precipitate even when boiled. Hence he concluded that albumen, was present, with fatty matter, and that caseine was entirely absent. This conclusion was confirmed by the action of ether, which, when agitated with the urine, rendered it completely clear by dissolving the fatty matter, and caused a separation of the albumen as a tremulous jelly-like coagulum, leaving the urine in its natural state. The evaporation of the ether caused a deposit of fatty matter in a semi-crystalline state upon the sides of the phial. On the other hand, an artificial mixture of cow's milk and urine, made to resemble the chylous urine in appearance, having been examined by similar tests, was *not* cleared by ether, underwent no coagulation by heat (only the ordinary pellicle of caseine being formed), but gave a copious precipitate of white curdy matter on the addition of a few drops of acetic acid to the fluid when filttered after boiling. Finding, however, that the behaviour of human milk with re-agents, especially with acetic acid, was a point not determined by chemists, Mr. Mayer instituted a series of experiments upon the subject; the results of which were, that out of sixteen specimens of human milk from as many different females, five at once gave a precipitate upon being treated with acetic acid, whilst the remaining eleven did so only after being boiled. He found, however, that as *all* gave a precipitate after boiling, the presence of human caseine might be effectually determined in this mode; an admixture of one drachm of milk with half a pint of water, or of one grain of caseine in 3646 grains of water, being thus detectable. By this test, Mr. Mayer showed that the mixture of human milk with urine is as easily recognisable as that of cow's milk; and his conclusion that the urine in question contained albumen and ordinary fatty matters, not caseine and the fatty matter of milk, was thus fully confirmed.

### *On the Hæmorrhagic Diathesis.* By Dr. Lange.

Dr. Lange has recently contributed an interesting paper on this affection, containing the tabulated results of an examination of the history of 140 examples. It has hitherto been only met with in the nor-

thern hemisphere, occurring in America between 30° and 45° N. latitude, and in Europe between 45° and 60° N. latitude. Germany is among the countries most liable to it, and especially so along the course of the middle Rhine and the Maine. The coasts are far less liable than are inland regions. The inhabitants of mountainous districts are less liable than those of plains traversed by rivers. Vine countries are very liable.

The subjects of the disease do not attain great age, for among 140 examples only nine were aged more than fifty, the female sex seeming to possess less power of endurance than the male. The causes giving rise to the hæmorrhage have usually been insignificant. as e. g. scratches cuts, leech-bites, extraction of teeth. When the bleeding is *spontaneous* that from the nose is most frequent and oftenest fatal. *Vomiting of blood* is much more rare, and it is remarkable, that only one of the fatal cases arose from *hæmoptysis*—the disease indeed seeming to have no affinity with tuberculosis. In one case vaccination gave rise to profuse bleeding, without, however, preventing the rising of the vesicle. The statement of Fordyce and others, that deep wounds bleed less freely than superficial, is not confirmed; but the healing of all kinds of wounds is very tedious, although gangrene seldom occurs.

The disposition to hæmorrhage sometimes first shows itself during the first weeks of life, but usually during the first or second year, the latest period in these tables being the eleventh year. The earlier the hæmorrhage exhibits itself, the earlier, as a general rule, does death occur. At a later period the inclination to hæmorrhage usually manifests itself as petechiæ and ecchymoses. Accessory diseases do not, as *a priori* it might have been expected they would, pursue a more dangerous course in these subjects, excepting when those of the respiratory organs excite epistaxis. The *duration of the attacks* is very different, this being perhaps, on an average, ten or twelve days—spontaneous bleeding usually continuing longer, but being better tolerated than traumatic. The effect of *season* is not determined; but the bleeding seems to occur oftenest in spring and autumn. The blood is thin, and deficient in coagulability. In the majority of instances, the intellectual powers of these patients are of a high order; and in most of them the colour of the eyes is blue, the complexion fair and delicate, and the hair light. Usually the constitution is strong, and the muscular system is often powerful and developed. In certain cases, the radial artery has been observed to be transparent in some spots,

owing to the deficiency of the fibrous coat—confirming Rokitanski's view, that the disease consists in a remarkably delicate construction and vulnerability of the vessels, and a watery condition of the blood. The cholerico-sanguineous temperament prevails, and so called rheumatic pains are very constantly observed. Spots of *ecchymosis*, often absent, may, when present, be either spontaneous or traumatic, the latter being usually much larger than the former. They change in colour as after an ordinary contusion. Sometimes the ecchymoses stand in a critical or antagonistic relation to other affections; thus, e. g., they may disappear on the advent of a paroxysm of gout, and re-appear at its termination. In some hæmorrhagic families, they constitute a lower form of the disease in certain of the members. Traumatic ecchymoses may be produced by strong muscular exertion, by falls, or even pressure. It usually disappears unaided, though requiring a longer period than the spontaneous; and if opened, it gives rise to dangerous hæmorrhage.

According to the tables, no difference seems to exist as to condition of life, or residence of town or country. The influence of hereditariness is only imperfectly indicated. The *mortality* from the disease seems to be greatest between 20 and 30, and then diminishes. The earliest age at which it has been known to cease spontaneously has been between 25 and 28. Commonly disease of the liver, hæmorrhoids, gout, or rheumatism, supervenes, and the influence of art is of little use. In palliating the affection, a certain time must always be allowed for the blood to flow, or congestion of internal organs is produced; and in such cases, where this precaution has been neglected, dry cupping of the extremities should be resorted to. Generally, the bleeding stops of itself; but only when exhaustion has occurred, Compression is of little use, and among the styptics sulphuric acid, muriated tincture of iron, and a spirituous solution of sal ammoniac, are the best. Cauteries and caustics usually fail.—*Schmidt's Jahrbuch*, vol. lxx. p. 35.

---

## SURGERY.

*Treatment of Ununited Fracture by the Application of Tincture of Iodine.* By Professor Blasius.

Professor Blasius communicated, in 1847, an account of the success he had obtained in the external application of iodine in pseudarthrosis;

and in the present paper he furnishes three other cases. The first was a healthy soldier, aged 28 who had suffered a simple fracture of the tibia and fibula. The ends of the bones had continued moveable for six months, when the following tincture was ordered to be applied externally, night and morning :—℞ Iodin. ℈j. Iod. Pot. ℥½, S. V. R. ℥j. In three weeks the callus was completely consolidated. In the second case, the fragments of a fractured femur (occurring in a soldier, aged 23) remained moveable after thirteen weeks ; but became quite firm after three weeks pencilling with the iodine. The third case, occurring in a boy 12 years of age, was equally remarkable.—*Med. Zeitung*, 1851, No. 39.

---

*Remarkable Course of a Ball in a Gunshot Wound of the Thorax.*

The subject of this observation, while standing two or three paces off, was struck from behind on the left side of the thorax by a ball, which had rebounded at a sharp angle from a beam. He died in twenty minutes. The middle of the left shoulder blade and sixth rib had been grazed, as well as the posterior lobe of the left lung—the left branch of the pulmonary artery being also wounded. A large quantity of blood was effused into the left pleura. No ball could be found, until the pericardium and heart were opened—both being quite uninjured. It was now found quite flattened in the right ventricle. The coats of the pulmonary artery, immediately at the division from the trunk, were penetrated, and the ball had fallen by its own weight through the trunk of the pulmonary artery into the right ventricle.—*Schmidt's Jahrbuch*, vol. lxxii. p. 328.

---

*On the Gradual Reduction of Herniæ long irreducible.*

By M. Malgaigne,

In this article M. Malgaigne brings forward two new examples of the efficacy of his plan of reducing old and voluminous herniæ. This consists in subjecting the patient to a very low diet and purgation, applying ice or cold poultices to the tumour, and employing the taxis daily. One of these cases was an enormous inguinal enterocele, which had remained unreduced for several years, and now equalled in circumference the size of an ordinary hat. Complete reduction was obtained after continuing the above means for 17 days. The other was an in-

guinal entero-epiplocele, which had remained unreduced for 7 years, and was reduced completely in 6 days.—*Rev. Med. Chir.* x. 179.

*Case of Circular Arterial Distribution around the Neck of a Direct Inguinal Hernia.* By Professor Rizzoli.

This patient was operated upon for a large strangulated direct inguinal hernia on the left side. On passing his finger to the ring, in order to ascertain the locality of the obstruction, Professor Rizzoli found that, on whatever side he explored, it was met by a strong arterial pulsation. He only voluntured to make several superficial scarifications, which were not deep enough to implicate the arterial branches, and gradually obtained sufficient dilatability to procure the return of the hernia. The intestine, indeed, from delay, was in a state of gangrene, and the patient died. At the *post mortem*, the origin of this circular arterial pulsation was found to be as follows :—The umbilical artery, rising from the external iliac, and continuing pervious, coursed up on the inner side of the ring, and sent two branches above the upper border of this. From the epigastric artery, which ran on the outer side, also sprang two branches. One of these coursed around the lower and inner side of the ring, so as nearly to surround it, and the other ran along its upper side parallel to the branch coming from the umbilical. An incision anywhere around the tissues of the neck of the sac would have given rise to fatal hæmorrhage, so large were these branches. A diagram is furnished with the paper, and the preparation is preserved in the Bologna Anatomical Museum.—*Bull. delle Scienze Mediche*, vol. xix, p. 143.

## MATERIA MEDICA AND THERAPEUTICS.

*On the Application of Collodion in Erysipelas.* By M. Latour.

M. Latour, believing that Erysipelas is best treated by the application of an impermeable covering to the skin, has experimented with a great variety of substances, and pronounces collodion to be the best. Spread out on the surface, however, it sometimes so compresses the skin as to cause pain and irritation—phlyctenæ also forming where it cracks. The following combination, however, remedies these inconveniences completely :—*Collodion*, 30 *garmmes ; Venice turpentine*, 15 *decigrammes ; caster oil*, 5 *decigrammes :* to be mixed by shaking. It is easily detached by a linseed poultice. The following is also used

with great success, rarely irritating the skin :—*Collodion 30 part ; old castor oil, 2 parts.—Révue Médicale*, 1851, p. 462.

---

*Injections of Salt in Intoxication.* By M. Lalaux.

The difficulty with which intoxication is sometimes distinguished from comatose cerebral affections, renders valuable the possession of a simple means of at once aiding the diagnosis and dissipating the symptoms. This, M. Lalaux declares, exists in the administration of an injection of warm water containing two table-spoonfuls of salt. He explains the benefit derived by the partial evacuation of the poison in the copious stool that are promptly produced. The injection also sometimes induces vomiting, when mechanical irritation of the fauces has failed to do this.—*Gaz. des Hôp.* 1851, No. 121.

---

*On Iodine Clysters in the Treatment of Dysentery.* By Dr. Eimer.

Dr. Eimer believes that the great point to which practitioners have to direct their attention, is the enormous amount of organic losses consequent on the continuance of this affection—so that, according to Œsterlen*, within three weeks, more than the entire blood-mass may pass away as albumen in the stools. As a means of cutting these discharges short, he strongly recommends iodine clysters ; which in recent cases, may at once arrest the progress of the disease, and in all diminish the number of stools, and normalize their condition, whatever the individual peculiarities of the case may be. From five to ten grains of iodine, and as much iod. pot., are administered in two or three ounces of water, from two to four times a-day—twice daily usually sufficing. If the rectum is too irritable to retain it, ten or fifteen drops of tr. opii are to be added, and a mucilaginous vehicle substituted for water. In spite of unfavourable conditions, so constantly successful did Dr. Eimer find this remedy during an epidemic, that he believes the disease will, as a general rule, be found curable by it, if it be resorted to before the organic changes in the intestine have advanced too far, exhaustion become too considerable, or important complications set up. In some slight cases it was employed alone. Generally, a simple oily emulsion was also administered, and sometimes acetate of lead and opium.—*Henle's Zeitschrift*, Band x. p. 238.

---

* See British and Foreign Medico-Chirurgical Review, vol. v. p. 245.

*On the Employment of the Iodide of Sodium in the Treatment of Secondary Syphilis.* By Dr. Daveri.

Notwithstanding the great success which has attended the employment of the iodide of potassium in the treatment of venereal disease, its disagreeable taste, and the gastric irritation it sometimes gives rise to, induced Dr. Daveri to try how far the iodide of sodium might be advantageously substituted for it. In the nineteen cases of secondary syphilis affecting the bones and periosteum, in which he has employed it, he has found it equally beneficial, while it is far more palatable. It is also borne in larger doses, and these can be more rapidly increased; so that the duration of the treatment is abridged. Some cases which proved rebellious, or only slowly yielded to the iodide of potassium, have been rapidly cured by the soda preparation.—*Bulletino delle Sc. Med.* vol. xix, 269.

---

*Case in which extraordinary quantities of Acetate of Morphia were administered.* By Dr. Creede.

In a case of malignant disease of the abdomen, which in its diagnosis baffled the skill of many eminent practitioners, the pains were so intense as to lead to the patient taking such extraordinary quantities of acetate of morphia, as are probably quite unprecedented. An apothecary has supplied an account of the quantity which he furnished; but besides this, the remedy was several times obtained elsewhere, and various other forms of medicine containing opium were ordered. Commencing with 2 grains of acetate, in Feb. 1849, the quantity was gradually increased, so as to bring it to 14 grs. for May, 50 for June, 60 for Oct., and 136 for Dec.—making a total of 454 grains from Feb. to Dec. Commencing with 192 grains for Jan. 1850, this reached 648 in March (21 grains per diem), and 936 in May—thus avaraging 30½ grains per diem; and highest quantity ever taken in one day—namely, 52 grains—was taken this month. After this the quantity diminished again to 648 in June, 216 in Sept., and 288 in Dec.—making a total of 5175 grains (or 10 oz. 6 drachms, 15 grains, Apoth. weight) for 1850. During four months of 1851, the quantities taken continued much the same, amounting to 756 grains. The entire quantity taken during 25 months amounted to 6385 grains, or 1 lb. 1 oz. 2 drachms and 25 grains, Apoth. weight.—*Casper's Wochenschrift*, 1851, No. 45.

# MISCELLANIES.

## HOMŒOPATHY.

### THE HOMŒOPATHY ARTICLE IN THE 33RD NUMBER OF THE CALCUTTA REVIEW, REVIEWED.

In the 33rd number of the Calcutta Review for March, the Indian public were favoured with an article on "Homœopathy, and its introduction into India."

In a note appended to this article, the Editor remarks that "it can scarcely be necessary to state, that it is not intended to convert the Calcutta Review into a Homœopathic organ. We have unhesitatingly given insertion to the preceding article, without reference to our own sentiments on the subject of which it treats, because it is fairly and candidly written, by one who is thoroughly earnest in seeking to promote the welfare of his fellow-men."

As much in "earnest to promote the welfare of my fellow-men" as this writer can be, and believing that the result of his labours is not calculated to promote this end, and certain that his paper is *not* "fairly and candidly written," I propose in this communication to expose a few of the fallacies with which his article abounds, to point out the dangers likely to result to society from the adoption of his views, and to repel the unjust, slanderous, and false charges, brought against the medical profession by this eminently 'candid' and 'fair' reviewer.

I say *some* of the fallacies, for it is not possible within the limits to which I must restrict myself, to go over the whole of the ground traversed by the writer—nor perhaps is this necessary. The readers of the *Madras Athenœum* may remember, that in some recent numbers of this journal, I went over much of the main features of the theory and practice of Homœopathy, and stated objections to both, of rather a more grave and weighty character than those stated by the Reviewer at page 51, which the writer in that spirit of 'fairness' and 'candour' so much admired by the Editor, affects to believe to be those "usually brought against the new system."

The Reviewer gives us a sketch of the life of the founder of the system Samuel Christian Frederick Hahnemann, from his birth at Meissen in Saxony in 1755, till his death at Paris in 1844, but omits to mention that he began life by inventing a nostrum as a cure for all diseases! I pass over the question "what is Homœopathy?" and the reply given by the Reviewer, having already discussed that question in the *Athenœum*, nor need I again enter on the "infinitesimal dose," a point also examined and illustrated by me on a former occasion. It is worthy of note, however, that our Calcutta Reviewer does not stick at trifles, not even at such a "trifle" as the dilution of the remedy, to the

decillionth degree—nay, we are gravely assured "that some of his ("Hahnemann's") last cures were attained by merely smelling the appropriate medicine!" of course this man of large faith is not even startled at the boldness of giving a "whole drop of the mother tincture." Although he does not say so in express terms, it follows as a matter of course that he assents to the assertion of his great matter, "that the length of time a powder is rubbed, or the number of shakes we give to a mixture, influences the effect on the body." Rubbing or shaking being so energetic in developing the inherent virtues of medicines, that "latterly" says Hahnemann, "I have been forced by experience, to reduce the number of shakes to two, of which I formerly prescribed ten to each dilution." In mixing a powder with sugar, the exact period we are to rub, is therefore laid down; and in dissolving a solid in water, we are told to move the phial "circa axin suam," and at each attenuation to shake it twice "bis brachio quidem bis moto concute."

As many of my readers after all this, may still have but a feeble notion of homœopathic attenuation, I give the following table with the signs Hahnemann employed to distinguish them.

| Attenuations. | | Parts of grain. |
|---|---|---|
| 1. | First | one hundredth. |
| 2. | Second | one thousandth. |
| I. | Third | one millionth. |
| II. | Sixth | one billionth, |
| III. | Ninth | one trillionth. |
| IV. | Twelfth | one quadrillionth. |
| V. | Fifteenth | one quintillionth. |
| VI. | Eighteenth | one sextillionth. |
| VII. | Twenty-first | one septillionth. |
| VIII. | Twenty-fourth | one octillionth. |
| IX. | Twenty-seventh | one nonillionth. |
| X. | Thirtieth | one decillionth. |

Nor can I resist giving a tabular view of some substances employed by the homœopaths.

Charcoal—one or two decillionths of a grain.
Chamomile—2 quadrillionths of a grain.
Nutmeg—2 millionths of a grain.
Tartar Emetic—2 billionths of a grain.
Opium—2 decillionths of a drop of a spirituous solotion.
Arsenious Acid—one or two decillionths of a grain.
Ipecacuanha—2 or 3 millionths of a grain.

To return to our Reviewer. He does not inform his readers that all Homœopaths are not quite so honest as himself in the matter of the infinitesimal dose;

an omission I beg to supply, by informing them that many homœopaths do not hold that infinitesimal doses are a *sine qua non* in homœopathy, provided the law *similia similibus curantar* be admitted as of universal application. Schmid, Mühre, and Fleischmann, all trump cards in the homœopathic pack, give drop doses of the "mother tincture," to say nothing of the homœopathic "*nibblers*" who give, in an infinity of globules, effective doses and still pass for very successful homœopaths.* If this fact is new to the learned Calcutta Reviewer, I would advise him to ponder it well—a fact it is, as a good half of the London homœopaths know full well. A late controversy in the pages of the Homœopathic Times reveals the truth in part, and it was pointedly alluded to in Dr. Routh's celebrated reply to Dr. Dudgeon, a reply admitted by Dr. Dudgeon himself to contain the most, 'brilliant argument' yet adduced against Homœopathy. Having elsewhere exposed the monstrous doctrine that chronic diseases owe their origin to three miasms, *psora*, *syphilis*, and *sycosis*. I need not repeat the exposure here; nowhere does the credulity of the Calcutta sage shine with brighter lustre than when he expatiates on the "genius of Hahnemann" with patient industry tracking the unseen unnoticed taint, &c. &c. "up to its original type, the leprosy of the old Testament." At all this we can smile, but when he goes on to say that regular physicians are in the habit of "poisoning the life of the tender infant by the driving in of teething eruptions, I am constrained to tell him that he either wilfully or ignorantly slanders the profession. This is just one of a hundred passages in this review, written *ad captandum vulgus*. There is not a medical student of a year's standing in any medical school in the world, who would not laugh in his face if he asked him if such were the practice in the hospitals he frequented; nay, there is not an old woman from the Land's end to John O'Groat's who could not tell him that the "genius of Hahnemann" or the "advent of a homœopathic physician" was not required to point out the 'madness' of such a proceeding.

I now come to the question of "comparative success." I admit with the Reviewer, that this is the question of questions. The public after all cannot be expected to take much interest in disputes about theoretical points; to the mass; the gist of the question is which system cures best.

* Dr. Rainsford a pervert of whom the homœopathists are very proud, has published his "reasons for embracing homœopathy" and supports his new faith by "cases illustrating the superiority of the new practice over the old. Take one;—A child thirteen months old is seized with a fit;—Dr. Rainsford being called in, finds the gums swollen from the presence of molar teeth; he very properly scarifies the gums and applies cold to the head; the convulsions only return once and the child is cured. The case thus read is nothing extraordinary, but is one of every day occurrence. But it so happened that, along with this judicious treatment on which Dr. Rainsford seems to have accidentally stumbled, he gave Tinct. Belladonnæ one drop, and subsequently Tinct. Ignatiæ one drop, Tinct. coffee one drop. It was these remedies, and not the scarification of the gums, and the cold applications to the head, which according to Dr. Rainsford, accomplished the cure. Reader, there are many Rainsfords amongst the homœopathists, who practice what they call 'homœopathy' in this honest fashion. These be the "*nibblers*."

Of late the homœopaths have dealt largely in statistics; now, my object in this paper is to meet the Reviewer on this very ground, and to prove the unfair and dishonest manner in which his friends have dealt with the arithmetic of the question at issue. Every one knows how much of late years statistics have been brought to bear, not only on medical, but on political problems, of the deepest interest. We see men daily appealing to figures in support of the most opposite views. Lord Derby, Mr. D'Israeli, and Mr. Young will "prove" to their own satisfaction at least, from statistical tables obtained from the most trustworthy sources, how "British Industry" has been ruined by Free Trade;—while Lord John Russell, Sir James Graham, and Mr. Cobden will take the same returns and shew us from them, how Great Britain has increased in health and wealth since commerce was unshackled. It is impossible that both can be right, one or other party must "cook" the statistics, must juggle with the figures, to make them express results so much opposed to each other. Deal honestly with figures, and they will speak the truth, leading us to right inferences in science and in politics. But to seek in crude statistical tables the solution of any question, political or scientific, without a careful and often complex analysis, will only lead us into the "quicksands of false arithmetic." Into these "quicksands" our Reviewer has certainly fallen.

Let us glance for a moment at the right method of using figures to aid in the determination of medical questions.

"Facts are the foundation of the science of medicine; figures the enumeration of facts; to sneer at the employment of the latter then, is simply absurd.

Our knowledge of the existence of facts is ascertained by observation, hence the truth of the well known Aphorism of Baglivi; having learned the existence of facts we draw conclusions from them by induction and comparison. By induction, however, we never render a conclusion more than highly probable; we infer that the sun will rise to-morrow because observation has shewn that it rose on the mornings of a host of preceding days; the inference in this case is in the highest degree probable, but still only probable. The more numerous the facts on which the induction is founded, the greater the degree of its probability, hence the use of figures is indispensible to express the number of our facts, to learn ourselves, and to enable others to appreciate, the value of the conclusions we draw.

If while using a given remedy a certain per centage of persons recover from any disease, while a smaller per centage of persons recover from the same disease while using another remedy, the inference is that the latter remedy is inferior in curative power to the former.

In arriving at this conclusion we have made two inductions, and then compared the inferences. We have inferred, that is to say, that under the use of the first drug the same per centage of persons suffering from the same disease would again recover, and have pursued the same process of reasoning with reference to the second drug; and then we have campared the figures expressing the inferred constant results from the employment of the two drugs. Now supposing that the drug used in either case were the same—the individuals treated the same in all appreciable particulars, age, sex, and constitution—the disease under which they laboured essentially the same, and the external circumstances by which they were affected,—e. g. diet, temperature, season, &c. generally the same, then the results obtained, supposing the persons treated to be sufficiently numerous, would probably be nearly correct; the two might be compared, and so a conclusion be drawn by simple enumeration and a comparison of the figures obtained.

I now proceed to show that the homœopaths in general and the Calcutta Reviewer in particular have, in dealing with figures, disregarded all the above named qualifying circumstances, and by giving simply an enumeration, have arrived at the most fallacious results.

The homœopaths give the mortality in the hospitals under the care of regular physicians, at from 7 to 10 per cent. The reviewer says 9 to 10.* In their own hospitals as from 4 to 5 per cent. But they leave out, and so does the Reviewer, the fact that in the regular hospital returns all classes brought in *moribund*, past all treatment, are included, while such cases are *not included* in the returns of the homœopaths.

Another element is left out of sight in these fallacious statistics. None but *severe* cases are included in the returns of the regular hospitals, trifling cases rarely if ever find beds in the great hospitals, they are treated out of doors, and the results do not appear in the returns at all. This is particularly the case as regards the smaller London hospitals such as University College, and King's College, because these comparatively small institutions are not merely public charities, but were founded chiefly as Schools for the clinical instruction of the pupils of those Colleges. Consequently the cases admitted are all selected with an eye to teaching, and the severest types of diseases, and the gravest accidents alone, find admission.

Of course the mortality is much higher than in the great hospitals, Guy's, St. Bartholomew's, the London, and the Middlesex; a glance at the returns published by the Registrar General, to which I refer the reader, will shew the fact, and the above is the explanation of it. The same is the case in Paris; for the very same reason, the mortality in the Hospital of the Faculty of Medicine is much greater than that of the Hotel Dieu. La Charité, or La Pitié.

* This is a great exaggeration, many of the Hospitals in England have a mortality as low 2'0, that of Canterbury for example, Cambridge 2'4, Exeter 3'2.

The Hospital of the Faculty is a School for the observation of disease in its gravest forms, therefore at the central bureau of admissions the severest cases are alone selected for treatment there. I pray my readers to reflect on this most important fact. How fallacious would be the inference drawn regarding the success of the treatment of disease between University College Hospital for example, and St. Bartholomew's, or between the Hospital of the Faculty and the Hotel Dieu,! unless the important qualification above explained were taken into account. A careful investigation has shewn that "owing to the common prejudice against homœopathy" few severe cases find their way to the homœopathic hospitals. Dr. Routh, who carefully examined these institutions with the consent and in the presence of the gentlemen in charge of them, found cases of slight headache, cases of intoxication, and vast numbers of hysterical patients. "This, by increasing the number of non-fatal diseases necessarily diminished the per centage of mortality." Such cases I need not repeat are not to be found in regular hospitals.

Again, the numbers from which the homœopaths construct *their* tables for comparison are small. Major Tulloch in his great work on the mortality in the British Army, published at the expense of parliament has shewn that all numbers under 10,000 cannot be depended upon. The same has been shewn from the Irish tables of hospital mortality. Dr. Routh observes, "it was said, 100 well selected cases gave good results. He believed, however, from experience, they were only in the direction of truth. Another 100 equally well selected might give a direct negative." Now, the best homœopathic returns were those obtained from small numbers. The Reviewer at p. 34 gives the Hospital at Leipsic as one of the sources from whence homœopathic returns were procured. *Reader, the Leipsic homœopathic hospital by the latest accounts contained six beds, and four patients!* What a field for observation! really almost infinitesimal enough to satisfy Hahnemann himself.

A minor but still not unimportant source of fallacy remains, viz., the superior amount of comfort enjoyed in the small homœopathic hospitals as compared with the more crowded wards of the great regular hospitals both at home and abroad.

So much for the fallacies of homœopathic statistics in general. I now come to particular diseases. The homœopaths say that the mortality from Pleurisy in their hospitals is 3 per cent, while in the hospitals under the care of regular physicians the mortality from this disease may be seen to be 13 per cent; and then comparing these results, they claim the merit of curing by globules 11 per cent more than the regular physician. But, they omit to mention that in their returns they include cases of *pleurodynia*, a disease which every one—knows—resembling pleurisy in some of its symptoms, has no tendency to produce death. It is clear then that homœopaths and

physicians do not mean the same disease by the name pleurisy, for the former include under the term a mild class of cases which the latter exclude ; add to this the considerations formerly adduced as to the difference in the severity of the cases treated by physicians as compared with those for the most part found in homœopathic hospitals, and the exposure of the fallacy of the homœopathic returns of pleurisy will be complete.

I now come to the Statistics of Pneumonia. When the homœopathic tables exhibiting the results of their treatment of the disease were first published, the attention of regular physicians was instantly arrested. This is not, however, an age when stout assertion on scientific subjects even when supported by an array of figures, will pass unchallenged. No sooner did they appear than they were subjected both at home and abroad to a searching analysis, Although the Reviewer in another part of his article, of which I shall have something to say by and by, asserts that " Medical men shut their eyes and stop their ears" to everything belonging to homœopathy, vide page 50, no sooner did the homœopathic tables on Pneumonia appear, than, as I have just observed, they were scrutinized with care. Dr. Balfour one of the medical professors of the University of Edinburgh, went to Vienna for the sole purpose of investigating the point. His example was followed by Dr. Routh and both these gentlemen have published the results to the world. In addition to this the returns were examined, and the data on which they were founded carefully weighed, in almost every one of the professional publications in Great Britain, and papers were read on them before the various Societies.

Now for the result.

Dr. Balfour observed in Vienna that out of 320 patients admitted under Fleischmann 280 were under 40, and 22 above that period of life. They were of a better class, not the very poor and weakliest. The same observation was made by Dr. Gluck. Now, age is most important in Pneumonia, the mortality is high above 40 ; low below it, excluding children. The army returns give the mortality out of 12,000 cases as 1 in 29. (I am alluding to Pneumonia) sometimes as low as 1 in 45—the Navy 1 in 59, out of some 3,000 cases. And there is no homœopathy in the Military or Naval hospitals. The best homœopathic returns give the mortality as 1 in 22. Fleischmann's 1 in 16. I have taken the British army returns first, the most authentic and trustworthy documents in the world, because they deal with large numbers, and were drawn up not for the support of any particular views, and because they shew the mortality in this disease under regular treatment in a class of patients about the same time of life as those found in the German Homœopathic hospitals from whence their most favourable returns were procured. When it is considered that British soldiers serve in an Empire on which the Sun never sets. " Far as the breeze can bear, the billows foam" and therefore in every

possible variety of climate, that a large proportion of the cases must have occurred under circumstances the most unfavourable for treatment, on the line of march, in the bivouac, in the crowded transport, and then, notwithstanding all these disadvantages, observe the enormous superiority of the regular over the homœopathic practice as shewn unmistakeably by the figures, the question might be set at rest for ever.

But it does not suit the homœopaths to meddle with the Military and Naval returns, they prefer dealings with the returns obtained from the great Civil Hospitals of Great Britain, and comparing them with the German Homœopathic returns.

Let us examine the question on this their own ground.

Pneumonia as observed in Austria is seldom complicated with other diseases. In the hospitals of Great Britain simple uncomplicated Pneumonia is rare. The majority of the frequenters of the Public Hospitals in England are spirit drinkers —gin or whisky according to the locality—consequently Bright's disease, granular degeneration of the kidney, one of the many evils of spirit drinking, is a common complication. Tubercular disease of the liver is another. Now Bright's disease is almost unknown in Austria, and tubercular liver is rare. All the complicated cases occurring in the German hospitals are returned under other heads, and the fatal result does not appear under the head of Pneumonia. In the British hospitals all fatal cases of Pneumonia, whatever the complication, appear under this head as well as all cases admitted moribund. Out of 140 cases collected from the practice of three physicians Drs. Taylor, Walshe and Peacock, no fewer than 55 were complicated, whereas in the Lindz returns (homœopathic) in which complicated cases *were* included, only 8 out of 93 were complicated.

The cases of the Glasgow Infirmary have been often quoted by homœopaths, from 1843 to '45 ; but they have been examined in the most searching manner and it has been found that almost all were complicated, chiefly typhoid, and a great proportion were brought in moribund.

Sex is another most important feature. The distinction is not made by homœopaths. There are 75 males usually seized by Pneumonia to 25 females —but the per centage of mortality among females is more than double. Indeed, by comparison in the Registrar General's return for 1843 and 1844, calculating from 8000 fatal cases, the different number of persons living at each age, the per centage mortality to seizure from Pneumonia, excluding children, was 100 males to 211 females. In Dr. Tessier's 41 cases (homœopathic) 3 only were females, and if we take Fleischmann's cases recorded by Dr. Balfour, as a sample of all, the result from the preponderance of males, from *this cause alone*, would be 4 per cent. too favourable.

I submit the above to the candid consideration of all unprejudiced inquirers who are in search of truth, and not merely seeking props in support of

particular views ; and I maintain that they utterly destroy all trust in the homœopathic returns advanced by the *Calcutta Review* on the subject of Pneumonia.

I refer all who wish to pursue the subject for themselves to, the Army and Navy returns published at the cost of the Nation, to Dr. Balfour's Report on homœopathic treatment in Vienna, to Dr. Routh "on the Fallacies of homœopathy," to the "Reports of the Medical Society of London," and to the Medical periodicals of the day. These may be compared with the homœopathic works placed at the head of his article by the *Calcutta Reviewer*.

With the subject of cholera I must be more brief. The *Calcutta Reviewer* gives the per centage of deaths in this disease under regular physicians at 49. Under homœopaths at 7½ ! ! Now, here again physicians and homœopaths do not by the term cholera express the same disease. Physicians do not in their returns under this head, include cases of choleroid diarrhœa,—homœopaths do. Had the Medical gentlemen who acted under the orders of the Central Board of Health in London, and carried out the admirable plan of house to house visitation included in their returns every case of choleroid diarrhœa they detected, treated, and cured, they might have shewn returns as favourable. But this they did not do. Their business was to furnish the Board with returns of cholera—and this they did. The homœopathic cholera returns were subjected to the same rigid scrutiny as the others given, and the result was the same. When the writer was doing duty with H. M. 18th Royal Irish regiment in China, acting under the advice of Dr. French now Inspector General of H. M. Army Hospitals, and one of the first of living Military Surgeons, he was in the habit of inspecting during every outbreak of cholera every man in the regiment three times a day, at roll calls established by the Commanding Officer for the purpose, and saw also every man on guard in the same way. Cases of choleroid diarrhœa without number were thus detected, treated and cured, but it never occurred to him to include these men in the returns for the War Office, and Army Medical Board, as successful cholera cases.

This paper was nearly ready for the printer when the Mail of the 24th of April brought me the "Medical Times" for the 3d of that month. In this there is an article from the pen of Dr. W. T. Gairdner, Pathologist and Assistant Physician to the Royal Infirmary of Edinburgh, on "homœopathic hospital statistics." This valuable paper contains so much information on the vital part of the question, that I cannot but commend it most earnestly to the candid consideration of all who are earnestly looking for truth. After going over a good deal of the ground imperfectly examined by me in this paper, and shewing the fallacies resulting from a comparison between homœopathic and regular hospital statistics without the necessary qualifications, he observes. "But whether right or wrong, the experiment has been made, the challenge

is before the public, and I am prepared to meet it by a comparison of the results of Fleischmann's with those of other hospitals. I shall fix upon Fleischmann's because it is necessary to *my sense*, though not probably to that "*common sense*" "which is quite competent to decide" &c. &c. to go little into detail; and what can be shewn to be true of the Vienna experiment (the first and the most triumphantly paraded), may probably be assumed to be true of others. I shall take then the eight years of Fleischmann's hospital, from 1835 to 1843 (the reasons of which are given at length in the work of Dr. Drysdale and Russell, and partially in Dr. Forbes' celebrated review) and I compare them with the results of two years in the Edinburgh Infirmary (1842-43) on which the aggregate number of "experiments" happens nearly to coincide with that of the Vienna hospital in the eight years mentioned. The returns in Edinburgh for these years were drawn up by Dr. Peacock, now of St. Thomas' hospital, whose name is a guarantee at once for their business-like accuracy and their good faith, so far as these could be secured by him.

Let me add that I am guided in my selection exclusively by the circumstances above mentioned. If the Vienna Guard Hospital, or any other, can be shewn to reverse my conclusions, I shall unquestionably feel myself bound to admit the fallacies of my argument: but in the mean time I am taking at least no unfair advantage in comparing results which have lately been declared on high homœopathic, authority, "*far beyond the reach of any other known method of treatment*" with those of the hospital which has the reputation of the most open doors, and the highest mortality in this country.

In the work already referred to, the aggregate of cases in Dr. Fleischmann's Hospital is stated at 6551 (including 27 cases remaining from 1834) deducting 50 which remained in the house at the end of 1843, the aggregate number treated and dismissed was 6,501, of these 407 died—a mortality per cent of 6·26 or a little more than 6¼. In Edinburgh the numbers were

| | | | | | |
|---|---|---|---|---|---|
| In 1842 total number | 3529 | Deaths | 443 | or 12·5 | per. cent. |
| In 1843 „ „ | 2840 | „ | 315 | „ 11·0 | „ „ |
| In both years „ | 6369 | | 758 | „ 11·9 | „ „ |

But from this aggregate it is right to deduct the fevers which constitute a very large and fluctuating portion of the diseases in both hospitals—accordingly we have

| | Vienna. | Edinburgh. |
|---|---|---|
| Total cases | 6501 | 6369 |
| Deduct fevers | 1855 | 1822 |
| | 4646 | 4547 |

And if now we allow for a few more cases of Epidemic disease, which are in larger proportion in Vienna, during the period referred to, than in Edinburgh,

it will be observed that the list of what may be considered as sporadic or non-epidemic diseases presents a very close approximation in its aggregate numbers in the two returns. Not so the mortality, which is 5·46 per cent greater in Edinburgh, or not very far from double that of Vienna. Nay, for sporadic diseases, I am willing to call it *double*, since the fevers in Vienna, having a mortality of 8·46 tend to exalt the total mortality; while in Edinburgh they leave it almost unaltered, giving in the respective years a mortality of 12 5, and 11·1 per cent. Such is the homœopathic triumph *prima facie* and this is the usual nature of the appeal to "common sense," which, though so eminently "competent to decide" seldom travels (in homœopathic company) much further than to a conclusion of the above kind. I have, however, a little further appeal to common sense.

If any one familiar with the diseases of European countries were asked what were the chief sources of mortality especially in our hospitals, (a part from Epidemic diseases) he would at once answer without hesitation, Phthisis Pulmonalis, Disease of the heart, Bright's disease of the kidney, Apoplexy, Paralysis, and Softening of the brain—and, in a less degree, Organic disease of the liver. These diseases are not only among the most frequent, but they are by far the most intractable in our hospital lists. Excluding Epidemics, I believe I should not go far wrong in saying, that in Edinburgh Infirmary the diseases I have named make up half the deaths, and the first disease alone about a quarter of them. Dr. Gairdner goes on to shew how the Vienna Homœopathists excluded such cases from their hospital. "In the nearly equal aggregates of cases above noted we have the following numbers of these diseases admitted.

| | Edinburgh | Vienna Homœopathic. |
|---|---|---|
| Phthisis Pulmonalis | 276 | 98 |
| Disease (organic) of heart | 159 | 15 |
| Bright's Disease | 82 | 8! |
| Paralysis | 103 | 5 |
| Apoplexy | 14 | 9 |
| Disease (organic) of liver | 33 | 1 |
| | 667 | 128 |

All commentary upon this is unnecessary; the numbers speak for themselves. The whole number of these really fatal diseases according to the returns of both hospitals, is between five and six times as great in the Edinburgh Institution devoted to the relief of the sick, as in the Vienna one devoted to the glorification of homœopathy by *experiments*. The most fatal and most frequent disease of northern latitudes is nearly three times as numerous; the next in fatality and frequency ten times as numerous; a third almost equally formidable indefinitely more numerous in Edinburgh, inasmuch as this last does not appear in the homœopathic returns at all!

In order, however, to make the conclusions which legitimately spring from this investigation more completely irresistible, I have had the curiosity to make a few further selections from the returns. I give below the remaining instances in which the Edinburgh proportion of cases materially exceeds the homœopathic. As if by magic, they turn out to be, with but two exceptions the most intractable enemies with which the practitioner has to deal. They are as follows :—

| | Edinburgh. | Vienna Homœopathic. |
|---|---|---|
| Neuralgia | 14 | 0 |
| Internal Aneurism | 18 | 1 |
| Diabetes Mellitus | 17 | 0 |
| Amaurosis | 15 | 0 |
| Caries and Necrosis | 57 | 5 |
| Malignant Tumours | 55 | 0 |
| Other Tumours | 36 | 0 |
| Bronchitis Acute | 118 | 15 |
| Rheumatism, Acute and Chronic | 343 | 188 |

Dr. Gairdner then gives a table of the diseases that predominate in the homœopathic returns, one or two of these sound formidable in Indian ears, such as Dysentery and Diarrhœa, but how different are these diseases in Bengal, and in Vienna! But excluding these, he asks what is the rest of this list, which forms the staple of the homœopathic *experiment?* Is it not composed without an exception of the *curable* often of the *easily*, and *constantly curable* diseases of the economy—he instances 300 cases of sore throat against only 34 in the Edinburgh returns, and 20 of herpes, diseases which are rarely, except in the most special cases, admitted into any of our great hospitals in this country on account of the pressure of the more severe and fatal diseases to which, as shewn above, our doors are thrown open, while our experimentalists turn their backs on them or at least give them the cold shoulder!" Dr. Gairdner then adds "and now, I assert without any fear of contradiction that the homœopathic returns are not only void of triumph to the system, but that they cover it with disgrace."

After what was adduced in another part of this paper, I need not follow Dr. Gairdner through his remarks on the homœopathic statistics of Pneumonia, further than to point out how this acute pathologist, to whom the *real* statistics of disease are as familiar as to any man living, and who is not to be gulled or imposed on by figures not based on facts—exposes the pit into which these false arithmeticians have fallen. "They have, however, betrayed themselves in one point,—in giving the cipher of 300 to Pneumonia, and only 15 to the far more common disease bronchitis—they have committed what according to Napoleon (Talleyrand?) is worse than a crime—a blunder;" showing that

it requires a more adroit management than even that of our experimentalists, to manufacture statistics of plausible and serious aspect from the miniature types of disease by which they (very judiciously) think proper to test the efficacy of their system. I feel that it is useless to enter further into this statistical fraud. It is, I hope, abundantly evident that even supposing the numbers to be correctly stated, and the docketting of the cases to have been free from objection, the character of them as reported, is such as to imply selection; and, on the other hand, it is next to certain, that no dependance whatever can be placed on the statements of the reports in regard to the nomenclature of diseases. We have therefore only to deal with the fact, that an hospital in which there is reason to think that the vast majority of the cases were of the most trivial description has a mortality of 6·26 per cent; and that the interested partizans of the system therein pursued demand for this result the palm of an unquestionable superiority, or (in the words of one of their leaders,) proclaim it "far beyond the reach of any other known method of treatment." To this it is enough to answer, that many hospitals in England have an average mortality much below that above mentioned; I have already instanced three of these, (Canterbury, 2·0, per cent—Cambridge 2·4—Exeter 3·2) I might add, that of eight district general hospitals in Scotland "(all receiving be it observed for the most part only severe cases) three have a smaller mortality than the homœopathic institution," with all its careful exclusion of fatal diseases; Dr. Gairdner also refers to thirty provincial hospitals, among which there are only two, where the mortality is not less than that of the Homœopathic Hospital in Vienna, and the *average* mortality is less by nearly a third. "So that the unprecedented success of homœopathic treatment is not only a very ordinary, and moderate success as compared with hospitals in general, but as compared with hospitals of the size of Fleischmann's (fifty beds) it would be found to be a positive failure, and doubly, trebly a failure when we take into consideration all the facts revealed in the preceding part of this letter.

Before concluding, I cannot resist alluding to one other subject. I mean the proportion of cures. In the record of a death it is impossible to show any bias, or in any way to deviate from accuracy without gross falsehood, with correspondingly great risk of detection. But, in the column of cures in this hospital may be read the character of the whole of its records. The alleged cures in the Vienna homœopathic hospital are 92 per cent of the whole cases, and, as the deaths are 6·25 per cent, it follows that there is actually *scarcely any medium between death and cure!* To any one who knows what hospital cases are, or should be, this simple statement proves rather more than was intended. Compare it with the returns of any hospital which has no system to support. I choose Dumfries' simply, because its mortality is identical with that of Fleischmann's hospital.

| | Cures per cent. | Deaths per cent. |
|---|---|---|
| Fleischmann's hospital..... | 92 | 6·26 |
| Dumfries'... ..... ..... | 76·02 | 6 26 |

Alas for the

"Vaulting ambition, that o'er leaps itself
And falls on the other side of truth and probability."

In straining every nerve after this ideal and fictitious ratio of cures, Dr. Fleischmann unluckily forgot the following ugly dilemma. If from the excellence of his art, or any other cause he was enabled to cure 16 per cent more than Dumfries, why was his skill not equally effective in reducing the mortality? There can be only two answers to this question, and we may give the homœopaths their choice of them. Either the cases were really curable in enormous proportion, and the homœopathic art is responsible for a mortality which must be considered, under these circumstances, quite appalling, or the alleged cures are a mockery and a delusion, inconsistent with nature and fact, and cunningly dressed up for the indiscriminating wonder of the multitude. To apply an uncharitable judgment of Dr, Fleischmann's to his own case, "curantur in libris, moriuntur in lectis."

If homœopathic returns prepared and published by men who have some pretensions to a medical education require to be dealt with as I have shewn, before truth can be wrung from them; what is to be said of 'cases' and 'cures' reported by *lay globulists?* why, that they are utterly, and altogether worthless, and of no account—I do not mean to slander you, homœopathic amateur ladies and gentlemen after the manner of the Calcutta Reviewer when writing of the Medical profession—Be that far from me. I give you credit for the best motives, and believe that you are actuated by a desire to go about doing good. But you must permit me to ask, that allowing for the argument's sake, all the efficacy you claim for your dots and your drops, what are your qualifications for the practice of this difficult art? How do you propose to distinguish one disease from another at the bed-side? or, as the Doctors in one word say "diagnose" your cases? you will answer me by triumphantly pulling out of your pocket, or crochet bag as the case may be, your homœopathic manual, and tell me "I have it all here."

Here are the symptoms pat of every ill to which flesh is heir; we have only to read and to apply to such and such symptoms, such and such dots. Does not that worthy Calcutta Reviewer tell us at page 52 "that the system has been extensively practised by amateurs in the Civil and Military services," &c. &c. &c. and why not by us? Dear ladies and gentlemen homœopathic amateurs, what the Reviewer says is very true, "amateurs of the Civil and Military services," do practice homœopathy, walk into houses not unfrequently, where the sick are, and unknown to the medical man who has the life and

death responsibility on his shoulders, poison the minds of relatives and friends, and disturb their confidence in their adviser perhaps, for such "amateurs" are to be found in the "Civil and Military services"—persuade them to throw the Doctor's physic to the dogs, and "just to give the dots, because they have done so much good in the case of Mrs. Snooks and other dear friends." "Who is deceived? it is only the Doctor! if the patient gets well, why glory to the dots,—if he dies—why, it was all the Doctor, and we have no responsibility."

Oh! it's an honorable practice in these gentlemen of the "Civil and Military services" and it does *so* much good. But will you be much offended if I tell you, good friends, that I doubt your power to diagnose disease, yes, with all the aid you can get from your "manuals" and your "guides," and even Calcutta Reviewers, and Serampore "Friends." Skill in diagnosis my homœopathic amateurs does not come by instinct; there is no Royal road to it, it is not to be acquired by bestowing "fragments of time" on its study. It is an act in which the most sagacious physician is a student unto his life's end. Listen I beseech you to the words of one of the great living masters of the art.

Dr. Watson in his Introductory Discourse on the Principles and Practice of Physic, after dwelling on the necessity of an intimate acquaintance with general Pathology, before the study of the Practice of medicine is even entered on, observes, "what is the true import and promise of these words! (the Principles, and Practice of Physic.) By the principles of medicine are meant those general truths and doctrines which have been entertained and established slowly indeed, and irregularly, but still with considerable precision, by the continued observation of attentive minds throughout the entire progress of medicine as a science. These *principles* I profess to teach you. The practice of medicine, or the particular application of those general facts and doctrines, I shall *describe* to you; but I cannot profess to teach it in this room; nor can you learn it; except in a very imperfect sense from my description of it. It is the science that I shall here endeavour to unfold. Skill and facility in turning that science to useful purposes I am unable to impart. These are qualities that do not admit of being communicated from one mind to another. The Practice of Physic like every other practical art is to be learned by its repeated exercise; by habit; by carrying its various acts into repeated exercise again and again; or, if they happen to require no manual dexterity, by looking on and seeing them done again and again. There is this capital difference, however, between the art of healing, and some other arts that the blunders of early attempts may be both grievous and irremediable. There is this also peculiar to our art—that it proceeds upon observations made at the very time when its exercise is wanted; and that it requires skill in *observing* as well as skill in *acting*. You will find, what, perhaps, previously to positive trial, you might not suspect that the senses, the eye, the ear, the touch—however sharp or delicate they may naturally be,

*require a special course of training and education before their evidence can be trusted in the investigation of disease.*" After illustrating this he adds. "It is in the words of a hospital, or in the domestic chamber, it is among the sick and the dying—and there alone, that you can either thoroughly or safely learn the Practice of Physic."

Again, he thus describes the condition of a person let loose to observe disease for himself without previous training, and that knowledge of what Samuel Johnson calls the "labours of past ages" without which the world must always remain in the infancy of knowledge. "In truth a person who without any previous information concerning diseases, should betake himself to a hospital with the design of impartially, and resolutely investigating their phenomena—such a person, however, clear and strong his intellect might be, would find himself for a long time, more puzzled than instructed by what he saw. He would be perplexed by the seemingly shifting and contradictory characters presented by the same malady in different patients; or in the same patient at different times, and not less so by the outward resemblance of disorders essentially unlike. He could not but be confused by the multitude of symptoms that crowded upon his attention on every side; and at a loss to distinguish important facts from those which, for the chief ends of his pursuit, were trivial or useless."

One extract more—"The subjects with which we have to deal are not matters of mere speculative curiosity or intellectual amusement—to be taken up to-day, and dismissed perhaps, with unconcern to-morrow—but they involve questions of "life and death."

Weighty words these my homœopathic amateurs, and worthy of sober consideration; you may say, all this is applicable to the practice of *physic*, but not to the practice of homœopathy. But you forget, that although homœopathy professes to teach a new method of practice it leaves us to the *old way of diagnosis*—one of the most bitter complaints made by the homœopaths is that the regular physicians will not meet them in consultation—"even to establish the diagnosis." It is in the writings of Lænnec, and Forbes, Chomel, Andral, Watson, Williams and others of the same school, that the homœopath must seek his knowledge of the physical signs of the diseases of the chest, and he must apply them in practice as he has learned them, there and with regard to the *practice*, if you tell me that your dots, if they do no good, do no harm, I have only to say that we won't fight about their harmlessness. But suppose the disease to be acute, going on to destroy structure and function, what then?—*Rome burns while you are fiddling.* Time is lost, the stage for effective treatment is gone by, and the sufferer perishes or goes through the remainder of his life crippled in the affected organ.

Proceeding with his summary view of the superiority of homœopathy over regular medicine the reviewer asserts that, "for certain pains and sufferings, he

(the homœopath) has an exact corresponding remedy, and expects their removal as a scientific result of its exhibition." I ask, if this alleged *certainty* on homœopathic treatment be a fact, how is it that this system after being for half a century before the world, after having, as I shall presently prove, been subjected to the most rigid scrutiny by some of the most acute intellects living and dead, with all the aid the press can give it, *puffed* in all the various ways of this the most puffing age the world has seen, supported by taking, *but false and fallacious statistics*, still battles for its very existence. In Liepsic the most learned city in Europe, where it has been longest known and tried, reduced to its hospital of six beds, and four or five patients.

Boasting in Great Britain only 104 practitioners,* I take the Reviewer's own figures, out of the whole mass of the medical men of the kingdom ; with all its hospitals and dispensaries, not diminishing by a single figure the admissions into the regular Institutions, as the Registrar General's returns shew. In all our Medical Schools having but one professor, and he in office contrary to the expressed and unanimous wish of his colleagues, (I mean Dr. Henderson ) (How *is* this ?) was any real improvement in Medicine or Surgery, however counter to prevailing notions, so treated for a fifth part of the time ? The homœopaths say " because the medical profession are interested in the sale of drugs." It is false. In France no physician, no medical man, can by law sell one grain of physic—that is the business of the pharmacien. In Germany it is the same. In England no member of the Royal College of Physicians dare deal in drugs, he has no more to do with the Pharmaceutical Chemist, than with the tailor who makes his coat. The general practitioner is an exception to this rule, but every member of the profession wishes it otherwise. No physician in Scotland has any thing to do with Pharmacy, the same rule obtains in Ireland. The medical officers of the Army and Navy are not interested in drug-selling ; it would be a huge convenience to them if they could carry their material in their pockets. Yet in the Army and Navy homœopathy finds no place, no—not for the sole of its foot.

I had, as I have elsewhere stated, finished the greater part of this letter before I received the admirable paper of Dr. Gairdner on homœopathic statistics. from which I have quoted so largely at the conclusion of my own argument on the statistical part of the question, where I have since inserted the new matter referred to. Seeing that the Reviewer himself is content to rest his case on the statistics he has brought forward, I think I am warranted in, as the lawyers say " stopping my case." I think I have on the very point on which he thought himself strongest, cut the ground from under him, as he thinks or at least asserts he has done to the Doctors. I therefore save my readers, on whose patience I have trespassed so much, what I had written on

* Note.—I do not even ask how many of these practitioners are men without the Diploma of any College.

some of the remaining points. But I must before concluding, briefly touch on one subject.

At page 50, in no very measured language, he takes the medical profession to task for the apathy they have evinced towards homœopathy. Accusing them of "shutting their eyes, and stopping their ears," &c. &c. Now this is just what this very credulous person has read in the books, pamphlets, and homœopathic journals to which he has confined his studies, in so far at least as medical questions are concerned. His homœopathic pastors and masters say so, and like a true disciple he believes them. But, my learned friend you are terribly mistaken. Your masters have treated you in this matter as they have done with the statistics of the question. A committee of the Acadamie de medicine was appointed to investigate and report upon the whole question, and this they did. They subjected it to a searching enquiry in its theory and practice; some of its ablest members put it to the test of experiment, and the result was a failure. Did you ever hear of Andral? I dare say not, for he is not a writer of the Fleischmann stamp; you are not likely to see his name mentioned very often in the course of *your* medical researches; still he is somebody notwithstanding. He is in a word at this moment, perhaps, the greatest pathologist on the continent of Europe, Professor of medicine in the first School of France, that of Paris, physician to La charite, a member of the Royal Academy of medicine, and the author of a work on pathological anatomy, and another on clinical medicine, both translated into every language in Europe, and each in its own department the greatest store-house of facts and observations ever made by one man,—John Hunter excepted,—well, this exact observer tried on himself the most important of Hahnemann's experiments—*without Hahnemann's results*. He put homœopathic practice to the test of experiment in one hundred and forty cases in the presence of the homœopathists themselves, adopting every requisite care and precaution, yet in not one instance was he successful.* The details of his experiments will be found in the XV. vol. of the Medical Gazette Page 922. Now, men like Andral have neither time nor inclination for mere controversy, he weighed the new system in his well adjusted balance once and for all, and finding it wanting has since ceased to write about it. Life is too short for the labour of repeating the exposure of exploded fallacies. For the last ten or fifteen years the pages of the medical periodicals have contained articles on the subject of homœopathy by some of the first physicians in Great Britain, and since homœopathists have taken to statistics, I am sure none of them, not even our reviewer, need complain that their figures have passed without notice. But, the public do not see the professional publications, they do not come in their way, and this the globulists know very well, and therefore they repeat the old story; "The Doc-

* Be it observed, however, that in Andral's experiments, pneumonia *was* pneumonia, pleuritis was *not* pleurodynia, &c, &c,

tors won't listen," they won't examine, " they call us quacks" they stop their ears, they shut their eyes, &c. And the doctors, for the most part tired of contradicting them, let them shout and bawl in contemptuous silence, and so they have as regards noise at least, the best of the argument. For the hundredth time I have flatly contradicted this oft repeated falsehood ; but this very reviewer will repeat it again the next time he favours the public with a homœopathic article in the same " candid" and " earnest" spirit as the one now under notice. If the question were to be decided by the weight of testimony pro and con, I fear this pseudo science would cut a wretched figure.

Against his array of obscure " court physicians" to heaven knows how many " Dukes" " Grand Dukes" Arch Dukes, I could name every man of real eminence in the profession, men whose names are known wherever science is cultivated, and who will be remembered with honor when this sham science has passed into the shades of everlasting night. Dupuytren, Cruveilhier, Cloquet, Recamier, Rostan, Roux, Breschet, Lisfranc, Blandin, Rayer, Andral, Chomel, Bouillaud, Velpeau, Orfila, Marjolin Majendie, Halford, Bright, Holland, Budd, Todd, Forbes, Conolly, Watson, Williams, Hope, Cooper, Liston, Brodie, Lawrence, Stanley, Fergusson, Thompson, Pereira, William Putney Alison,—to the world known as the most sagacious of physicians, to the wretched and the out-cast as the " poor man's friend,"—Christison, Syme, and Abercrombie, and a host of other illustrious men living and dead *quos enumerare longum est*—and it is to bespatter such men as these, that this shallow and gnorant writer takes up his pen.

Before taking my leave of this would-be public instructor, I would ask him to reflect for a moment on the possible effects of his writings. With a culpable forgetfulness of his responsibilities as a writer, he has in the pages of a respectable periodical, (very improperly opened to him for that purpose) taken upon himself to pronounce a judgment on a profession and science, of which, every word that he has written proves him to be grossly ignorant, ignorant of its principles, and, if that be possible, more ignorant still of its practice. He has slandered its professors, and done all in his power to poison the public mind against them ; to shake their confidence in their skill, and doubtless,—for weak and foolish people are to be found as *readers* of, as well as *writers* in the Calcutta Review, he has convinced some of the truth of the system he supports, and the folly and danger of scientific medicine. And all this he has done, merely because surrendering himself soul and body to the guidance of shallow, and one sided, and unscrupulous writers, he believes all they tell him and thinks he has a " mission" to teach the " new system" to the world. I would say to this writer, if you are ambitious to do good to your fellow-men, go, Sir, and learn the art you profess to teach, go to the Anatomical School and learn how " fearfully and wonderfully" you are made, go to the lecture

room, to the wards of the sick and the chambers of the dying, and after you have done these things, and spent some toilsome years in acquiring experience for yourself, we shall then be glad to hear what you have to say, meanwhile you are "a blind man leading the blind," no marvel then that both fall into the ditch.—*Athenæum for June.*

Hyderabad, May 28th. M.

---

# GENERAL ORDERS.

## APPOINTMENTS.

G. O. G. 3*d August*, 1852, No. 156.—In the Revenue Department under this date, Assistant Surgeon Charles James Rogers, has been appointed to the medical charge of the Civil Establishment and Irregular Horse at Kurnool, from the date of Assistant Surgeon H. I. Penny's embarkation to Europe.

G. O. G. 24*th August*, 1852, No. 173.—Assistant Surgeon John Arthur, M. D., to act as Surgeon of the General Hospital, and Professor of Medicine and Clinical Medicine, during the absence of Surgeon W. Evans, M. D., on sick certificate, or until further orders—to take effect from the 1st August, 1852.

G. O. G. 25*th August*, 1852, No. 174.—Assistant Surgeon Ambrose Blacklock to be Surgeon of the 4th District, vice Assistant Surgeon H. Stanbrough; but to continue to act as permanent Assistant to the Surgeon of the General Hospital and Professor of Surgery and Clinical Surgery, without prejudice to his permanent appointment of Surgeon of the 4th District, until further orders.

G. O. G. 27*th August*, 1852, No. 176.—In the Revenue Department under this date, Assistant Surgeon Eaglesfield John Barker, to act as Civil Surgeon of Cochin, during the employment of Assistant Surgeon John Pringle on other duty, or until further orders.

G. O. G. 17*th September*, 1852, No. 187.—In the Judicial Department under this date, Assistant Surgeon William Scott, M. D., has been appointed Zillah Surgeon of Salem from the date on which his absence from his station exceeded six months.

G. O. G. 21*st September*, 1852, No. 189.—In the Judicial Department under this date, Assistant Surgeon William Henry Davids has been appointed Civil Surgeon of Malabar, but to continue in medical charge of the 29th Regiment Native Infantry, until relieved.

## LEAVE.

G. O. C. C. 14*th August* 1852.—Assistant Surgeon J. Thompson, Medical Department, in continuation to 1st November 1852—St. Thome and Eastern Coast, sick certificate.

G. O. C. C. 3*d September* 1852.—Assistant Surgeon J. T. Williams D. D. 9th Regt. N. I. from 16th August 1852 to 22d April 1853—Madras and Neilgherries, sick certificate, via Calcutta.

G. O. C. C, 14*th August* 1852—Apothecary W. H. King, Superintending Surgeon's Department, Saugor Division—In continuation to 31st March 1853. To remain on the Coast on sick certificate.

G. O. C. C. 21*st August* 1852—2d Apothecary P, Crummy, Pension Establishment—In continuation of the leave granted in G. O. C. C. 6th September 1851—for 12 months—Mysore and Neilgherries.

G. O. C. C. 28*th August* 1852—Assistant Apothecary D. Gorman, 2d E. L. I.—from date of leaving Secunderabad to 1st September 1853—Madras, sick certificate.

G. O. C. C. 4*th September* 1852—Assistant Apothecary C. Doig, H. M.'s 25th Regiment—In continuation to 30th September 1852—St. Thomas' Mount.

G. O. C. C. 11*th September* 1852—Assistant Apothecary J. West, Medical Department from 2d September 1852 to 2d Nov. 1852—Bangalore.

Assistant Apothecary M. R. Butterfield, Pension Establishment from 15th September 1852 to 15th March 1853—Palamcottah.

G. O. C. C. 25*th September* 1852—Apothecary J. T. King, Collector's Establishment, Chingleput from 1st October 1852, to 31st March 1853—Madras, sick certificate.

## PROMOTIONS.

G. O. G. 24*th August* 1852, No. 173—Senior Assistant Surgeon James Anderson, M. D. to be Surgeon, from the 28th April, 1852, vice Cheape, retired.

G. O. G. 27*th August* 1852, No. 176—Senior Assistant Surgeon John Grant, M. D. to be Surgeon from the 30th June 1852, vice Mackintosh retired.

G. O. G. 24*th August* 1852, No. 173—Acting Assistant Apothecary Jeremiah Gray, to be Assistant Apothecary from the 4th August 1852, vice Houghton deceased.

Passed Medical Apprentice John Butler, to be Acting Assistant Apothecary from the 4th August 1852, vice Gray promoted, and Assistant Apothecary from the 17th August 1852, vice Pollett, pensioned.

Passed Medical Apprentice Peter Anderson, to be Acting Assistant Apothecary from the 17th August 1852, vice Butler, promoted.

G. O. G. 27*th August* 1852, No. 176—Acting Assistant Apothecary Peter Anderson, and passed Medical Apprentice, Edwin Augustus Etridge, John Howard and Joseph Sausman, to be Assistant Apothecaries from the 27th August 1852.

Passed Medical Apprentice Charles William White, to be Acting Assistant Apothecary, from the 27th August 1852, vice Anderson.

G. O. G. 7*th September* 1852, No. 181—Acting Assistant Apothecary Charles William White, to be Assistant Apothecary from the 4th September, 1852, vice Paul deceased.

Passed Medical Apprentice Daniel Karney to be acting Assistant Apothecary from the 4th September 185, vice White promoted.

## REMOVALS AND POSTINGS.

G. O. C. C. 3*d August* 1852.—Asst. Surg. E. J. Palmer, from 28th Regt. N. I. to 1st Regt. N. I.

Do. J. T. Blenkin, from d. d. 1st Regt. N. I to 28th Regt N I—but to continue in medical charge of the 1st Regt N. I. until relieved.

G. O. C. C. 6*th August* 1852.—Do. H. Cholmeley, from doing duty 1st Mad. Fusiliers to 1st Madras Fusiliers.

Do. F. Day, from do. do. to do. do.

G. O. C. C, 25*th August* 1852.—Surg. J. Anderson, M. D., (late promn.) to 3d Bat. Artillery

G. O. C. C. 27*th August* 1852—Asst. Surg. H. Carnegie, to do duty 1st Madras Fusiliers.

G. O. C. C. 30*th August* 1852—Do. W. H. S. Barn, from 2d Lt. Cavalry to do duty with and take medical charge of the 19th Regt. N. I.

Do. G. Betts, from d. d. under Sup. Surg. Northn. Divn. in medical charge H. Co.'s Steam Frigate "*Zenobia*," to do duty 5th Regiment N. 1.—To join on being relieved from present charge.

Do. J. E. Dickson, from under the Orders of the Officer Commanding the Madras Brigade Rangoon Field Force to do duty H. M.'s 51st Light Infantry.

G. O. C. C. 9*th September* 1852—Surgeon H. G. Graham, from 8th Regt, N. 1. to 8th Regiment Native Infantry,

Do. C. Paterson, M. D, from 16th Regt N. I. to 52d do.

Asst. Su. D. D. Foulis, M. D., from Zillah Su. Mangalore to be at the disposal of the Offr. Comg. Southern Divn. when required, remaining in his present charge until warned by the above officer to join.

Asst. Surg. W. R. Babington, Civil Surg., from Coconada to do duty 18th Regiment N. 1.

Do. J. H. Blackwell, Civil Surg., from Vizagapatam, to do duty 10th N. I.—To join without delay.

Do. J. G. Gibbs, from doing duty Supg. Surgeon's Dept. Northn. Division and affording Medl. aid to 18th Regt. N. I. and Zillah of Ganjam to do duty 39th Regiment Native Infantry—To join when relieved.

Do. J. Miller, from 10th Regiment N. I., to do duty 45th Regiment N. I—To join at Secunderabad.

Do. H. R. Oswald, M. D., from doing duty Superintending Surgeon's Department Southern Division, to do duty B Troop H. B. but to remain in present charge until further orders.

Do. J. C. K. Bond, from doing duty 2d Battalion Artillery, to do duty 9th Regiment N. I.

G. O. C. C. 4*th August* 1852—Assistant Apothecary A. Lynn, from d. d. H. M.'s 84th Regiment, to Superintending Surgeon's Department Southern Division.

Do. W. Miles, from Superintending Surgeon's Department Southern Division, to do duty H. M.'s 84th Regiment.

G. O. C. C. 25*th August* 1852—2d Dresser V. Bulram, No. 330, from doing duty General Hospital, to do duty 19th Regt. N. I—To join forthwith.

G. O C. C. 26*th August* 1852—2d Dresser V. Jaganadum, No. 328, from doing duty General Hospital, to do duty 5th Regiment N. I.

G. O. C. C. 27*th August* 1852—Assistant Apothecary A. Spiers, from d. d. 1st Madras Fusiliers, to 1st Madras Fusiliers.

Do. J. Bartley, from d. d. 1st Madras Fusiliers, to do duty General Hospital—To join at the expiration of his leave on Medical Certificate.

Do. J. West, from Garrison of Bangalore, to Superintending Surgeon's Department Centre Division.

Do. W. Barren, from E Troop H. A., to Garrison of Bangalore.

Do. J. Butler, (late promotion), to do duty 1st Madras Fusiliers.

Do. Peter Anderson, ( do. ) to E Troop Horse Artillery.

Do. E. A. Etridge, ( do. ) to do duty H. M. 84th Regiment.

Do. J. Sausman, ( do. ) to do duty 1st Madras Fusiliers.

Acting Apothecary C. W. White, (late promotion,) to do duty 1st Mad. Fusiliers.

G. O. C. C. 30*th Aug.* 1852—Assistant Apothecary R. Barrow, from under the orders of the Officer Comg. the Madras Brigade Rangoon Field Force, to under orders of the Officer Commanding the Madras Division of the Army of Ava—To be employed as may be found necessary.

| | | | |
|---|---|---|---|
| Do. C. Cole, | from ditto | ditto, | to ditto, |
| Do. J. Wilson, | from ditto | ditto, | to ditto. |
| Do. J. Powell, | from ditto | ditto, | to ditto. |
| Do. C. Georges, | from ditto | ditto, | to ditto. |
| Do, J. Howard, | from ditto | ditto, | to ditto. |
| 2nd Dresser M. Appavoo, | No 363, from ditto | ditto, | to ditto. |
| Do. Y. Yeatherajooloo, | No. 326, from ditto | ditto, | to ditto. |

1st Dresser Rungayah, No. 74, embarked in April 1825 with details, and retained at Rangoon.

2d Do. D. Marian, No. 165, ditto ditto ditto ditto,

G. O. C. C. 31*st August* 1852—Passed Medical Apprentice C. Smith, from 2d Eur. Lt. Infantry, to under Superintending Surgeon Saugor Division.

G. O. C. C. 9*th Sept.* 1852—Asst. Apothy. H. Hitchcock, from 18th Regt. N. I., to 2d N. V. Battalion,

Acting do, D. Karney, (late promotion) to 18th Regt. N. I.

1st Dresser Rungayah, No. 74, from Zillah of Rajahmundry and doing duty under the Officer Comg, Madras Divn, of the Army of Ava, (recently returned from Rangoon), to do duty Police and House of Industry, until further orders,

2d Dresser B. Narrainsawmy, from Police and House of Industry, to Chintadrepettah Dispensary.

Do. N. Yeasoo, No. 192, 1st Battalion Artillery, to do duty 30th Regt. N. I. to join.

Do. Patchapah, No. 299, 28th Regiment N I., to 5th Regiment N. I.

G. O. C. C. 10th 10*th Sept.* 1852—Do. A. Hyasawmy, No. 128, from 6th Regt N. I., to do duty with 45th Regt. N. I.—To remain with the 6th until required to proceed with the 45th Regt. N. I.

G. O. C. C, 24*th August* 1852—2d Dresser G. Vencatasawmy, No. 188, from Dispensary at Chittoor to Colr.'s Department Northern Division of Arcot.

Passed Medical Apprentice C. J. Ambrose, from doing duty 51st N. I. to do duty Dispensary at Chittoor.

## IMPOST.

G. O. C. C. 6th August 1852 No. 44.—The Commander in Chief is pleased to direct that in future Medical Officers whether Regimental or in Civil employment in charge of Hospitals or Dispensaries shall keep a record of all cases of wounds, or other injuries, inflicted by violence, which may come under their treatment and grant a Certificate of such wound or injury, when applied for by the Magisterial or Medical authorities.

## MISCELLANEOUS.

G. O. G. 17th August 1852, No. 167.—Assistant Apothecary John Pollett of the 1st Madras Fusiliers, having been pronounced by the prescribed Medical Committee unfit for further service is transferred to the Invalid Pension Establishment on the Invalid Allowances authorized by G. O. G. 8th August 1848, No. 168.

G. O. C. C. 20th August 1852.—The removal of Assistant Apothecaries J. Harris and J. W. McKenzie, in G. O. C. C, of the 24th ultimo is cancelled.

Assistant Apothecary J. Harris having been reported fit to return to his duty, the remaining portion of the leave granted him in G. O. C. C. of the 17th April last is cancelled from the date of joining the 46th Regiment N. I., en route from Secunderabad to Madras.

Assistant Apothecary J. W. McKenzie will, on being relieved by Assistant Apothecary Harris proceed to rejoin the 47th Regiment N. I. at Secunderabad.

G. O. G. 3*d September*, 1852, No. 180—Senior Apothecary Thomas Hogg, has been permitted to retire from the service of the East India Company on the pension of his rank, namely 112£ 10s. per annum, from the date of his embarkation for Sydney.

G. O. C. C. 26*th August*, 1852—Assistant Surgeon J. E. Palmer of the 1st Regt. N. I., now at the Presidency, is appointed to afford Medical aid to the Troops proceeding on the Transport "Diamond" to Rangoon.

G. O. C. C. 27*th August*, 1852—Assistant Surgeon G. E. Aldred M. D. of the E. Troop Horse Artillery, having been reported fit to return to his duty, the unexpired portion of the leave on Medical Certificate granted him in G. O. C. C. of the 24th ultimo, is cancelled.

Assistant Surgeon G. E. Aldred, M. D, of the E. Troop Horse Artillery is appointed to do duty with the 28th Regt. N. I.

G. O. C. C. 31*st August* 1852—Assistant Apothecary H. Fuller, 29th Regiment N. I. having been reported fit to return to his duty, the unexpired portion of the leave of absence on Medical Certificate granted him in G. O. C. C. 21st June, 1852, is cancelled from date of joining his Regiment.

G. O. C. C. 1*st September* 1852—Assistant Apothecary W. P. Woodbridge of the Superintending Surgeon's Department Presidency Division, is appointed to afford medical aid to the Officers and Troops proceeding on the Transport "Bengal" to Rangoon, whence he will return by the first opportunity.

G. O. C. C. 3*d September*, 1852—2nd Apothecary C. Dashwood, of the 1st Madras Fusiliers, having been pronounced fit for duty, the remaining portion of the leave on Medical Certificate granted him in G. O. C. C. of the 31st January last, is cancelled.

G. O. C. C. 10*th September*, 1852—So much of the G. O. C. C. of the 9th Instant as directs Assistant Surgeon J. H. Blackwell, Civil Surgeon Vizagapatam to do duty with the 10th Regiment N. I., is cancelled and the Assistant Surgeon is appointed to do duty with the 47th Regiment N. I.

Assistant Surgeon J. Wilson of the 47th Regiment N. I. will proceed without delay to join and do duty with the 10th Regiment N I.

G. O. C. C. 11*th September*, 1852—With reference to G. O. C. C. of the 20th ultimo, Assistant Apothecary J. Harris, of the 46th Regiment N. I., is appointed to do duty at the Chintadrapettah Dispensary until further orders.

Apothecary R. Harper of the Superintending Surgeons Department Nagpore Subsidiary Force doing duty at the Chintadrapettah Dispensary will proceed to rejoin his Department at Kamptee on being relieved by Assistant Apothecary Harris.

G. O. G. 7*th September*, 1852, No. 181—Assistant Surgeon J. Mathison, M. D. who arrived at Madras on the 31st August 1852, has returned to his duty by permission of the Honorable the Court of Directors without prejudice to his rank.

G. O. G. 17*th Septemter*, 1852, No. 187—Assistant Surgeon E. D'Arcy Evezard, J. C. K. Bond, and Francis Day, are permitted to enter on the general duties of the Army.

G. O. C. C. 13*th September*, 1852—Assistant Surgeon J. Pringle, M. D. is to be considered as having been placed in Medical charge of the escort accompanying His Highness the Rajah of Cochin to Benares, from the date of arrival of the escort at His Highness' Camp.

Assistant Surgeon J. C. K. Bond, doing duty 9th Regiment N. I. is appointed to afford Medical aid to the Details of the 9th and 35th Regiment N. I. and all authorized public followers under orders to proceed on the H. C.'s Steamer "Hugh Lindsay," to join at Rangoon.

G. O. C. C. 15*th September*, 1852—With the sanction of Government Native Doctor Appavoo Pillay, is admitted as a First Dresser on the Establishment from the 25th June last, and posted to the Collector's Department Tinnevelly.

G. O. C. C. 20*th September*, 1852—Assistant Apothecary J. Davall, of the Superintending Surgeon's Department Ceded Districts, now at the Presidency, is appointed to afford Medical aid to the sick details under orders to proceed to Arcot, whence he will proceed to join his Department at Bellary.

G. O. G. 28*th September*, 1852, No. 193—Surgeon John Gill, is permitted to retire from the service of the East India Company, from the date of embarkation for Europe, on the pension of 191£ per annum.

# PART FIRST.

## ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Topographical Report of Sundoor and the Sanitarium of Ramandroog.* By Assistant Apothecary E. SMITH.

The village of Sundoor, the residence of the Rajah of that name is situated about the centre of his jagheer, on the left bank of the Sundoor or Werd river, about 28 miles West of Bellary.

The portion of the jagheer at present under cultivation is entirely situated in a valley, with two trifling exceptions at Cummatoor and Ramandroog.

Four distinct ranges of mountains surround a plain which is divided into two equal portions by the above mentioned river, flowing through it from S. W. to N. E.

The ranges of mountains bounding this territory, are the Ramandroog on the W. N. W. the Commarasawmy on the S. W. by S., the Palakee on the East, and the Jummanagur on the North; all these are within the jagheer. These mountains are separated from each other by passes, which form the only approaches into the valley. Of these the narrow pass of Yettenhutty on Durvasah, separating the Palakee and Jummanagur ranges, and the narrow valley between Ramandroog and Jummanagur at the hamlet of Madunholley, are alone passable for wheeled carriages; those of Ooblagoondy and Appenhulley between Palakee and Commarasawmy, and of Cudlagee, separating Commarasawmy from Ramandroog, are only practicable for bullocks; but very little labour would convert them into good cart roads, particularly the one through the Cudlagee pass, which, if rendered practicable for carts, would be of great benefit to the public as it would open a direct road up to Bellary from the productive Western Talooks of the Collectorate.

The roads in the Sundoor valley, are mere cart tracts and foot paths from one village to another, with the exception of that from Sundoor to the foot of the hill leading to the Commarasawmy Pagoda, which appears to have been some time ago a made road, and occasionally slightly repaired. The greater portion of the Sundoor valley comprizing all the very best land is under cultivation. The common kinds of grain alone are grown, such as the jahree coongoony, samah, kothroo, barathell, ramthell, paddy, bootoo, moong, wheat, &c. Of fruits, plantain, common mangoes, guavas, a few superior oranges, lemons, citrons, &c. There are a few pawn and sugar plantations on the banks of the Sundoor river. Very little advantage seems to be taken of the constant supply of water received from the hills, which might be husbanded for the purpose of irrigation were a few small dams constructed in different parts of the various nullahs which run down the valley East and West, and empty themselves into the river. A large portion of very good land which appears to have been at one time under cultivation, is now overgrown with jungle; there are also several springs (not now in use), and old tanks, the bunds of which have burst. This place seems to have been once occupied by a more numerous and energetic race of people, but is now going to ruin from the poverty, ignorance, and want of energy of the present proprietors.

The soil through the whole extent of the valley is of rich, deep red loam, and the great extent of beautiful soil on the mountains together with the climate, (the temperature ranging in the valley on an average about 7° and on the hill about 12° lower than Bellary) renders the jagheer favourable to the growth of every kind of grain, cotton, coffee, sugar and of the European vegetables and fruit trees that have been introduced into many parts of India. If properly cultivated, this place would be a perfect garden, instead of which it is now unproductive, with the two trifling exceptions mentioned (Cummatoor and Ramandroog.) Much of this fine land is given to Sowcars in payment of debt, and the jungles are so rented that they will be entirely destroyed in a few years;—this latter subject demands the earnest attention of Government.

It is in the recollection of some few of the old inhabitants in and near Bellary, that the range of mountains extending between Dawgee and Boodial within five miles W. S. of Bellary, and which are nearly of the same formation as those of Sundoor, were once covered

with jungle, which rendered the climate of Bellary much cooler than at present. The rains and fogs of the S. W. monsoon setting in early in June, being attracted by the luxuriance of the foliage on the hills, now very seldom extend beyond the mountains. If the present system of renting out the jungles of the Sundoor mountains continue, they will also be destroyed in a few years, and this must cause an entire change in the climate of Sundoor as well as of its neighbourhood, Bellary.

The village of Toomty seven miles West of Bellary, on the Western side of the copper mountain ranges, was about 50 years ago a thick jungle with numerous strong running streams, used for the purpose of irrigation, which barely exist now in the hot season.—It is well worthy the attention of Government to consider whether the trifling expense of planting forest trees thickly round these springs, and along the banks of the streams issuing from them, as well as planting a portion of the range of hills nearest Bellary with forest trees and brushwood, would not soon be repaid by increased supplies of the finest spring water for irrigation and other purposes. The attraction of rain and moisture by the growth of the jungle and verdure on the hills would naturally alter the temperature, and benefit the cultivation on the plains.

The four ranges of the Sundoor Mountains before described, may be ranged according to their various merits, as follows ;—Ramandroog, Commarasawmy, Palakee, and Jummanaggur,—the table land of all about the same level above the sea, and surrounding plains. Palakee has a very slight advantage in height, and Commarasawmy in extent, but all fall short of Ramandroog, which is cooler from its westerly situation, and more within the influence of the S. W. Monsoon. Besides it overlooks at its West and South, the Western Talooks of the Bellary Collectorate, studded with Tanks. The Toombudra has its course through it and in the distance is to be seen the Southern Mahratta country. The other ranges overlook dry plains, and as an instance of the extent of influence of the South-West monsoons, on the 15th June 1850, the grass was nearly six inches high at Ramandroog, when at Commarasawmy it was stunted and burnt up. The fogs remain on the former until 7 A. M. daily, during the greater part of May up to the period above quoted, but never extend to the others, not even the Jummanagur ranges which are opposite to Ramandroog.

The plateau of Ramandroog is about 3,500 feet above the level of the sea, and nearly 1500 above the plains, it is situated about 36 miles

West of Bellary. About the centre of the range is the table land, on which the temporary building for a Sanatarium and the 10 Bungalows belonging to gentlemen at Bellary have been erected. Here is to be seen the upper portion of an old fort or place of refuge, about 1½ mile in length and 1 mile in extreme breadth, surrounded by the remains of a very ancient fortification, now entirely in ruins. At different places on the sides of the mountains, are the remains of outworks securing all the different ascents to the Droog, and commanding the different springs. Where there are no natural precipices, the traces of unfinished and extensive lines of excavation and other works, to render secure the more accessable declivities are to be seen. The higher ridge of the mountain extends along the extreme length of the plateau, nearly close to the eastern line of Ramparts, and slopes gently down to the Western edges, a fall of about 140 feet, towards the N. W. of the range. It extends for about 4 miles, keeping an elevation very little under that of the Droog, and so far do the riding paths made by private subscription extend ; from thence it continues in the same direction, but rapidly decreasing in height and bare of jungle and brushwood towards Hospett, near which it abruptly terminates. In the opposite direction, from the plateau it extends S. E. about the same height as the Droog, the summit however is of no breadth and very rocky for about six miles. Within one and a half mile of the Cudlagee pass, there is a considerable extent of very fine and deep red soil, sloping gradually down to the West and South, to a plateau of about 300 feet below the highest point of the range, affording a considerable area for cultivation with several excellent springs of water. The remains of a small hamlet Oopoopingavey now deserted is to be seen here, and small portions of the ground are occasionally cultivated by persons from Sundoor, who drive cattle up to graze.

*Soil.*—The soil of Ramandroog in all the hollows, bottoms and levels, and on all the slopes free from rock, is rich red loam, that in the hollows and bottoms being the washings from the hill sides is of course the best, that on the plateau is very good, and in many places of considerable depth and very productive.

*Agriculture.*—The natives have not sown any thing but raghee kothior, samah, ramthel, bootoo, koolthy, bagimo and wheat, they manure extensively, the seed is put down in the beginning of

June and only one crop is now raised, although the old inhabitants state that they used to have a second crop of the same description during the N. E. monsoon, but it now frequently fails and is never so heavy as it used to be formerly. An old man now living in the village states, that formerly "it used to rain so heavy for 3 months, that they could not go from one house to another," this man remembers the time, when Sir T. Munro encamped at Gurruk on his way to Hunghur, where two officers of his staff visited the hills. Since, it has been frequented by Europeans, gardens have been made near every house, fruit trees of all kinds have been introduced with great success. The graft mango, the peach, apples, pears and raspberries have been produced in great perfection; European and other flowers of many kind, shrubs in great variety and luxuriance, vegetables also of nearly every kind have succeeded well, more particularly the potatoe, which if put down at the commencement of the monsoon, requires no watering or particular care, the rains being sufficient. Oats have been tried in a small quantity with success. Water for the gardens on the plateau is the grand difficulty during the dry season, it has to be brought on bullocks from the springs on the sides of the hill, three puckally-bullocks is considered equal to supply as much water for a moderate garden as two men working in a Pacotah of a deep well, and as the approaches to the springs can be much improved, the difficulties at present experienced may be in a great measure overcome.

*Springs, Tanks.*—There is one deep reservoir and another of oval shape in the Citadel, apparently formed when the Fort was built, for the purpose of holding rain water but now useless from being out of order; these with two small ponds, neither of which retain more than a little water for a very short time, are the only tanks or reservoirs on the plateau. A small but very deep tank of excellent water, and of never failing supply, has been formed in an amphitheatre about 300 feet under the edge of the plateau. By throwing a bund across a gorge, down which a stream from several strong never failing springs flow into the low country, a good supply of water could be procured for every purpose required by the greatest number of inhabitants that are ever likely to reside on the hill. On a portion of ground in its vicinity several gardens have been lately made by General Steele, Mr. Pelly, Majors Henderson and Neill, the Hon'ble David Arbuthnot and Captain

Dallas. The European vegetables and fruits already produced give most encouraging prospects of the most complete ultimate success.

Nearly all the springs in Ramandroog, gush out from the Western side of the hill, into thickly wooded ravines, there are only a few on the Eastern side. They are all about the same level nearly 300 feet from the summit, the water is of the purest and best description and all the springs are strong. The inhabitants of the S. W. end of the plateau are supplied from three beautiful springs flowing down ravines on the S. W. edge, those on the other end, get supplied from a tank and its springs. The temporary Sanatarium Barracks is supplied from a spring immediately under it. There is little doubt but the natural reservoir which supplies all the springs now known, exists at a much higher level than where the springs appear, and that should even the boring now in operation fail in bringing water to the summit of the plateau, all the springs now frequented may be diverted into moderately deep wells sunk higher up, and rendered more accessable by improved roads. The expense of such an undertnking would be trifling. About one mile S. E. of the tank there are several other springs on the neighhourhood of the site of a ruined fort and a tower, one of these is of a strong chalybeate nature, during the rains it shews itself in several places higher up, than the main one, which alone appears above ground during the hot season ; the water has been recently tested and most favorably reported upon. It is confidently expected, that on a trial, the mineral waters of Ramandroog will obtain celebrity. It may be here observed that in the close vicinity of the mineral spring, there are several eligible sites for houses detached from the plateau, commanding most beautiful scenery, and within convenient distance of the tank for gardening.

*Ruins.*—The traces of the foundations of many houses, many of them buildings of considerable extent, also excavations, as if for granaries, are still to be seen within the upper line of fortifications, but the stones have been all nearly removed for recent buildings. Remains of villages, and houses are to be met with all over the sides of the hills, within the outworks and all about the springs, there are also the remains of several detached forts with numerous houses. In the neighbourhood of the chalybeate springs, the remains of a very extensive fort and considerable town are to be seen, and near the latter several springs are said to exist, but are now choked up with rubbish. A deep cut

through the ridge of the hill at the S. E. end of the plateau defines its boundary in that direction, proceeding beyond it however to S. E. there are the remains of many houses, and the fortification extends upwards of a mile along the summit of the hill, all denoting that at one time, the Droog must have been densely populated. Along the ridge are many beautiful sites for building houses.

*Inhabitants.*—About 50 families of people of the Beauda tribe, were the sole inhabitants of a small hamlet close under the old citadel when the Droog was first frequented in 1845. The ancestors of these people lived for several generations before them at the same place and followed the same pursuits, cultivating the soil or cutting wood and bamboo, and collecting wax and honey. Tradition has it, that they settled on the Droog after the Mahomedan conquest; a large body of the Beaudas having assisted the Mahomedans at the seige of Beejanuggur. Hyder Ali visited Ramandroog, and is said at one time to have entertained the project of repairing its works, instead of which however he built the fort of Nuggur near Sundoor, and the small bastion of Martinghur, above the Duwasah. The Beaudas the original inhabitants of the hill, are a healthy looking, clear skinned, active, well made race, industrious and temperate in their habits, they eat three meals a day, and unlike the natives of the plains, eat hot instead of cold rice in the mornings. Since the gentry have built here, several natives have settled on the hills, there is a small bazaar near the village in which there are 4 Dukans, a Baker and an Arrack contractor, the natives from the plains generally speaking, become much addicted to drinking arrack, and that which is sold here, is a very strong pernicious spirit, distilled from the Valumputty in the low country—there was neither toddy arrack shop before the natives from the plains came up with the Europeans; but now the Rajah receives a revenue of 600 Rupees yearly from it. The quit rent for the compounds of the bungalows amounts annually to Rs. 100, besides 1500, Rs. which the Sowcar gives for the rent of the jungles on the mountains.

*Wild Animals.*—Tigers, cheetahs, panthers, particularly the latter are seen occasionally; bears are frequently seen, and many have been shot; also elks, deer, and jungle sheep, many of which are yet seen in the jungles.

*Birds.*—All the usual small jungle birds are common at various seasons, including the bulbul, the sack and black bird, and many

singing birds, the most common are the pea and jungle fowl, the partridge and quail.

*Reptiles.*—Many cobras de capellas have been destroyed, also small snakes of various kinds, and a few lizards.

*Insects.*—Bees are in great numbers, and a large quantity of honey is found in the jungles ; white ants are very destructive.

*Geology.*—The formation of all the ranges is as far has been ascertained nearly similar, red and black oxide of iron abounds. Slate of several kinds, sand stone and a great variety of chalk; specimens of copper have been met with on the Ramandroog range in particular. This range affords a wide field for geological research, and the boring operations at present in process will greatly add to the information already obtained. Lime stone has never yet been met with on any of the ranges, that for buildings on the Droog was brought up from the valley near Sevenhulley where it abounds, the nearest point where sand for the same purpose is to be found, is within two miles of Nagalapore. Iron is manufactured at Shevenhulley, Cummatoor and several other villages. For the above geological information I am indebted to the kindness of Dr. Rogers.

A map of the 4 ranges of hills, a seperate one of Ramandroog, and a barometical section of it from Bellary to Commarasawmy are attached. I was kindly favoured with these by Major Neill, I am also indebted to that gentleman for much of the information contained in this report, which he was able to give me from his extensive knowledge of the Ceded District and its neighbourhood Sundoor.

*Trees.*—Vegetable productions. The trees indigeneous to all the ranges of the hill, are the different kinds of banian, teak, sandal, tamarind, mangoe, cotton, jackfruit, and a great variety of other trees, common to the jungles in the Western ghauts ; bamboos also grow abundantly, and there is a great variety of flowering shrubs, creepers and wild flowers, also various specimens of the Parasite tribe and ferns, several kinds of which are met with in the neighbourhood of the springs. The grass is of various kinds, that on the sides of the hill is the first to sprout ; although coarse it is excellent forage for cattle, the longest and coarsest, which is by no means abundant, only answers for thatch. The grass on the plateau, the hollows, and slopes, of a very excellent kind, from June to March, and capable of being made into good hay.

The jungle on all the ranges with the exception of a few forest trees, is of recent growth and much stunted, being shoots from the old trees that have been cut down. Of the trees springing up from sprouts, the teak is the most common, they are immediately cut down when of sufficient size for rafters of huts. The entire jungle, with the exception of that portion near the Commarasawmy Pagoda, is most wantonly destroyed. The young trees are cut down for the purpose of making charcoal, and to be used as firewood; more than is required for these purposes is cut down, consequently much is left to rot. The jungles are rented out by contract, and I am not aware whether the renter is bound by any restrictions for the preservation of the trees, if such do exist they are not enforced. What with the annual burning of the grasses, and the wanton waste and destruction caused by the renters in cutting down more than is required, the jungle in a few years will disappear from the hills. A check has been put to the wholesale cutting down of forest trees in the immediate vicinity of the Ramandroog plateau, notwithstanding which a great clearance has been made since 1845, when it was first visited by Europeans. A very effective and at the same time a very simple conservatory system might with a little trouble be established, by which a sufficient supply of wood and charcoal for the surrounding country might be ensured, and at the same time the growth of the trees encouraged. All the ranges of these hills are admirably adapted for the pasture of cattle on an extensive scale, hay to any extent at small cost and labour might be made for consumption until the new grass springs up, no provision of this kind is made by the natives, and the consequence is that after the grass is burnt down, the cattle are ill fed, until the new grass springs up.

*Roads.*—There are about a dozen miles of very excellent well laid out riding paths made by contribution from the European inhabitants and visitors, extending on both sides of the plateau along the summit and upper sides, affording every facility for pedestrian and horse exercise, and affording from all points, beautiful views of the surrounding mountains and of the low country. On the plateau itself, there is upwards of three miles of a broad level road for conveyances, there are two very excellent bridle roads on the Western side of the hill, one leading towards Nagalapoor being the tappal road to Hurryhur, which might with little labour and expense be made passable for bandies, the other much steeper but also a good bridle path, leads down to Gur-

ruk, towards Cudledge, and another leads down N. W. end of the plateau towards Hospett a very gradual descent, capable of being made a bandy road. The ascent from the Bellary side is a bridle road leading from the hamlet of Bavenhulley; this road is being repaired, and its direction so altered as to permit carts going all the way up. The bandy road at present from Bellary only extends as far as the hamlet before mentioned, from whence things have to be carried up the hill on coolies, involving expense and inconvenience.

*Cattle, Sheep.*—The cattle is of a small breed, and generally in good condition, they are also healthy, the natives say that in former years the cattle was much larger, but either from not crossing the breed, or from some other causes they have fallen off. Buffaloes also thrive well, Nellore cows have done well on the hills, and there is no doubt that an improved breed of cattle also would do well. The cattle of Cummatoor are of a larger and better kind than those at Ramandroog, but they are evidently all from the plains, the others have been bred in Ramandroog for generations back. Sheep after a time do well on the hills but require to be kept during the rains in a dry place; goats also do well.

*Climate.*—The equability of the temperature, the coolness of the nights, and the great advantage of being able to take exercise for many hours of the day in the open air, render the place delightful and salubrious to Europeans.

The prevailing winds are, from the N. E. from November to May, varying occasionally to N. W., and from the middle of May to October S. W.; from having no regular register of the thermometer throughout the year, I am unable to add a meteorological register to this report, but I understand one has already been sent, and is in possession of the Medical Board. The range of the thermometer throughout the year, as far as I have seen and ascertained, varied from 60° to 80°, the S. W. monsoon sets in early in June, and sometimes in May, and is generally over by the middle of August; even during its height, the rain seldom lasts for more than an hour or two at a time. The sun is seldom seen during the prevalence of this monsoon—and on an average, from sun-set to 9 a. m. a dense fog prevails. The temperature at this season is so equal that it seldom varies more than 2° or 3° during the 24 hours, during which it ranges from 64° to 67° or 68°; to this great equability of temperature therefore may be assigned the exemption

from rheumatism, catarrh and fever. The natives from the plains who have been up here enjoy good health, the Droog being most frequented during March, April, and May, by European visitors and native servants, and others attached to the Collectors. Although the sun is felt hot when one is exposed to its direct influence as in the plains, yet in the shade of a tree or in a house, from the air being cool, and a delightful breeze continually blowing, the climate is rendered delightful and exhilirating. The nights are very cool, and however warm it may be during the day, immediately the sun sets, or as soon as one gets under the shade of a hill, tree, or into a house, its effects are no longer felt.

*Commarasawmy* is about 23 miles S. W. of Bellary, and to the N. E. of Ramandroog range, it is of the same geological formation as Ramandroog; the undulating plateau is of greater extent, being about 6 miles in length and 3 in breadth. There is a greater proportion of the best description of soil to be found on it, no part of the hill is under cultivation, except a place of about 4 miles in circumference round the village of Cumptaroo where the soil is much superior to that of Ramandroog, in being entirely free from stones. Between Cumptaroo and Commarasawmy Pagoda there are many square miles of good, rich soil, well covered with jungle on a higher level than Cumptaroo, admirably adapted for cultivation of every kind—water is also to be had from springs along the sides of the hill, at about the same level below the summit as on Ramandroog, and there are facilities in forming reservoirs and tanks on the more extensive undulating table land of Commarasawmy not possessed by Ramandroog. Commarasawmy is not however so cool, nor so much under the influence of the westerly monsoon as Ramandroog, more particularly during the month of May. The view from the former is also on the West and South-East sides. Commarasawmy is a delightful relief from the plains, and many years ago was frequented by General Cullen then on the staff at Bellary.

There are 3 hamlets on the Commarasawmy range. The Pagoda and the few huts adjoining it, are approached by foot paths, passable for carriage animals only from the North and West sides, it is situated in a hollow about 400 feet below the summit of the mountains, a damp, dense, jungly situation where fever prevails. The land all around belongs to the temple, and though of excellent quality is waste

and overgrown with jungle. There are several springs in the vicinity of the temple.

The small hamlet of Soobrianhully is inhabited by Beaudas who cultivate a few fields of very good land, which is close to their houses and clear from the jungle. They principally live by cutting wood, and are a very healthy active set of men. The climate is described as being good and healthy, neither Cholera nor Fever has been known to occur.

*Cumptaroo.*—Consists of about 70 houses, it is said to be very healthy. Fever and Cholera are unknown among the inhabitants. They cultivate their fields in a better style and with more care than the natives in the plains and valley, or on Ramandroog. Iron implements of agriculture are much used, and large quantities of iron are made in the village from iron ore dug out of the summit of the hills about 2 miles West of it. The people of the village are more industrious, and more inclined to attempt improvements than the natives of the district generally. There is also a small tank and reservoir near the village both capable of being much enlarged and are seldom if ever dry. The people of Cumptaroo are of a better description than usually found on the plains or at Ramandroog.

*Roads.*—The only approach to the Commarasawmy ranges is by the foot paths passable for laden animals, a cart road could easily be formed up the eastern slope to Cummatoor, and the ascent to the Pagoda of Commarasawmy might with labour be made a bandy road.

*Palakee.*—About 21 miles West of Bellary, the approaches by Byree, Colahe, the valley, and the Ooblagoondy pass on the East side, are very gradual, and might be made safe and easy for wheeled carriages, the path from the valley enters up through a narrow chasm formed by the splitting of a precipitous wall of rock, rising nearly 300 feet above the side of the mountain, through which by a gentle ascent the summit of the plateau is gained, there is another easy pass for animals from the N. W. end of the mountains from the Yettenhully pass, and several cattle paths down the W. side. The table land of the Plateau is upwards of 3 miles in length and from 1½ to 2½ in breadth, undulating and sloping to the S. E., the soil in many parts is of the finest description and the grass is of good quality. There are many fine springs on the side of the hill about the same level as those on Commarasawmy, and several small tanks for collecting rain water for the cattle, and which might be much enlarged at trifling expense and labour. There are no inhabi-

tants permanent or temporary on the hill, it appears to be entirely deserted and only used for occasional grazing of a few cattle, altho' in a hollow part of the way down the N. W. side there are the remains of a considerable village.

*Jummanugur* range extends from Yettenhully pass nearly to Hospett, is parallel to, and divided from Ramandroog by the Sundoor valley. At Jummanugur the range is about the same level as Ramandroog, from thence the hill slopes off gradually to the West, there is some level ground along the range extending 8 miles from Yettenhully pass, but waste and unattached except close to the Pagoda, and the old Fort of Jummanugur, where one or two small patches are cultivated by 3 or 4 families that live there and who are the only inhabitants. The greater part of this range is as nearly influenced by the S. W. Monsoon as Ramandroog. There are many springs of water all along the sides of the same level below the summit. The approaches to the summit, are all very accessable from the West, North and East. In a hollow to the South of Jummanugur there is the remains of a small hamlet near a fine spring of water. There is a tower which was erected by Hyder Ali on the summit of the precipice overhanging the Duwasah on the Yettenhully pass, also a few breastworks and walls now ruined marking the site of Martingur.

In conclusion I beg to remark, that the large tracts of fine waste land on the summit of these four ranges, unoccupied by the natives of the country, who are not partial to so cold a climate, and now in many places covered by unproductive underwood, *might be farmed to advantage by my countrymen* (East Indians); I beg to throw out the suggestion in hopes that it may be taken into consideration, by those who are able and willing to contribute towards the advancement of a rapidly increasing class of British subjects, for whose livelihood and employment some exertions must be made, not only by themselves, but by other influential parties. All the ranges, but Palakee and Commarasawmy in particular, afford localities and space for the establishment of East Indian cultivators, who with such excellent soil and favorable climate, backed by British science and experience, might be enabled to strike out a new line of life, and raise themselves through a most honorable occupation, to a state of independence and comfort. Situated as these hills are, near Bellary

the produce of their industry, such as fruit, vegetables, wheat, grain, cattle, &c., would get a ready market. An experimental farm might be first established under supervision. European Pensioners with East Indian families of approved character and intelligence might be encouraged to settle here. Much would depend on the success of the first attempt, but with the means so bountifully bestowed by the European gentry on occasions when their sympathies are solicited, I am sanguine in hoping that such praiseworthy efforts would be crowned with complete success and eventually produce additional revenue to the Sundoor Rajah from a more intelligent and enterprizing race of farmers.

---

ARTICLE II.—*A Case of Placenta Prævia.* Communicated by Assistant Apothecary J. SHORTT.

Roshun Bee Æt. 30—Mother of six children, spare delicate habit of body.

On the 28th July 1850 at 4 P. M. was asked to see the patient. On examination I found the Placenta expelled with about 12 inches of the umbilical cord, the patient lying in a pool of blood and the left fœtal arm up to the elbow protruding external to the vulva with the head presenting, Pulse small and thready, skin cold, tongue foul and dry, bowels stated to be regular, and the urine free. Stated that she had had some hœmorrhage for the last 3, or 4 days, and at 12 M., this day was seized with pains, an hour after the membranes ruptured, a gush of blood followed together with the placenta, she grew faint and insensible, believes that by the interference of the native midwife in attendance the fœtal arm was brought down. The head was perforated and by the introduction of the blunt hook traction was made in the axis of the Pelvis. By these means the head and chest were readily extracted, but finding the uterine action suspended the Pelvis and lower extremities of the fœtus were allowed to remain in utero until expelled by its own efforts.

℞ Ergot of Rye.....ʒi.
Port Wine.....ʒi.
Water.....ʒss. To be taken immediately and repeated every half hour.

Dry frictions to the uterine region.

The patient had taken two of the above draughts and, in the course of an hour or so, uterine contraction followed, the fœtus was expelled and the uterus found firmly contracted, the usual bandage was applied and the patient left for the night.

On the following morning I found her doing well, pulse quick, tongue moist, skin dry, slept for some hours during the night, bowels confined, urine free, lochia discharging freely.

At 11 a. m. on the 30th I was asked to see the patient, and found her on her back with legs drawn up, complaining of acute pains in the uterine region aggravated by pressure, pulse small and irregular, skin perspiring, great restlessness, tongue dirty, bowels confined, lochia free. ℞ Opii gr. i. Hydr. Chlorid gr. vi. To be taken immediately and two hours afterwards to have the following

℞ Ol. Terebinth
,, Ricini āā.....ʒi.
Mellis.....ʒss.

The abdomen to be well fomented and covered with a bran poultice.

Vesp. Pain continues, but more diffused over the abdomen, pulse excited, skin warm, tongue foul, lochia scanty, urine free, two copious feculent stools.

Repeat the opium gr. i. and calamel gr. vj.

Fomentation and poultice to be continued.

31st. Slept ill, was restless for the greater part of the night, a feeling of uneasiness only on pressure, pulse small, skin moist, tongue foul, one stool during the night when 3 large worms came away, lochia free.

To take Ol. Ricini ʒj, immediately. The fomentation and poultice to be continued.

Vesp. Feels better, some little uneasiness continues, two feculent stools from the oil, pulse regular, skin natural,

℞ Pulv. Doveri gr. x.; Hydr. chlorid gr. ij. To be taken at bed time. Continue fomentations and poultice.

1st August,—Slept well and feels refreshed is free from pain or uneasiness, pulse and skin natural, bowels open, lochia free.

Nil.

2d. No complaint but debility, functions natural.

Nil.

7th. The patient continued to do well but was this day (3 P. M.) seized with an attack of fever and oppression of chest, pulse excited, skin hot and dry, tongue white, bowels confined. Has been troubled with milk fever for the last two days.

℞ Pulv. Jalapæ ℈ij.

Hydrarg chlorid gr. v. M. To be taken immediately.

8th. Is quite free from fever, bowels freely moved, pulse and skin natural.

Nil.

12th. The patient continues to convalesce rapidly.—*Discharged.*

*Remarks.*—The hœmorrahage was unavoidable from the implantation of the placenta over the os uteri; the patient had lost much blood as was evident from the low state I found her in; the pressure of the fœtal head however had acted as a plug in arresting the bleeding, which probably saved the patient's life, and if timely assistance had been at hand in all human probability the life of the child might have been saved by turning. My object in allowing the lower half of the infant to remain in utero until contraction was excited, was the same as that produced by the head presentation to block up the mouth of the bleeding vessel; I had every reason to be satisfied with this plan for it succeeded admirably.

The symptoms present on 30th had some of the characters of puerperal peritonitis, though there were others absent, I am inclined to believe that they resulted from debility.

I was kindly assisted in this case by Mr. Gillies, Assistant Apothecary, 48th Regiment N. I. to whom I am indebted for his ready assistance and co-operation in this and other instances.

# PART THIRD.

## REMARKS BY THE EDITOR.

The resignation of R. Davidson, Esq., Physician General will be regretted by many in the Commissioned and Subordinate ranks of the Medical Department. He was universally beloved for the kind and considerate treatment of his Subordinates and in being scrupulously just and particular in the performance of his duties. We have ourselves personally felt the advantage of being placed under this gentleman, and we are sure there is not a Subordinate in the Service who has ever known Mr. Davidson, but will look upon his departure with other feelings than those of regret. It gives us much pleasure to publish the following extract from the *Fort St. George Gazette* of the 7th instant :—

"No. 6 of 1853.—Physician General Davidson having obtained permission to retire from the Army the Right Honorable the Governor in Council feels it to be equally his duty and his pleasure to place on record the very high sense which he entertains of that Officer's most valuable services during the long period of nearly forty years in the course of which Mr. Davidson has been actively employed in all the most important operations in which the Madras Army has been engaged.

2. Whether in the Field or in Cantonment Mr. Davidson's course has been uniformly marked by the ability and zeal and firmness with which his duties have been discharged—and in his seat at the Medical Board especially, the Governor in Council is aware from his personal observation, that Mr. Davidson's exertions have been of signal advantage to the best interest of the Medical Department.

3. The meritorious career of the Physician General will be brought to the particular notice of the Court of Directors—and the Right Honorable the Governor in Council desires in bidding Mr. Davidson farewell to assure him that he carries with him to his Native Land the warmest wishes for his health and welfare, of the Government he has so honorably served.

C. A. BROWNE, Lieut. Col.

Secy. to Govt."

We sincerely wish Mr. Davidson and his family a safe return to their Native Land, and may they long live in health and happiness.

The above vacancy promotes F. Godfrey, Esq. late Superintending Surgeon Presidency to a seat in the Medical Board.

---

The Annual Examination of the Medical Subordinates at the Presidency passed off well this year—nearly the whole have been favorably reported upon by the Committee of Examination.

---

We must apologize for the late appearance of the present issue, but we shall not as is usual place the whole fault on our printers but must share it with them. We have been much engaged in preparing for a start into a new line of business, whether a profitable one or not remains to be seen—this drew our attention away for awhile from our Journal—and, together with the Christmas and New Year festivities which printers all over the world like to enjoy have caused our present No. to be so late in appearing.

---

The abolition of the Government Dispensary has caused a great stir among the Chemists and Druggists of Madras. They are all advertising a reduction in their former prices to meet the wants of the public and in hopes of receiving a large share of business. We have ourselves started into the field in hopes of deriving a profitable harvest, to what extent remains to be seen ; one thing however is certain that if we do not return to our former work richer we shall certainly be wiser.

---

# PART FOURTH.

## SELECTIONS.

## LECTURES ON DIGESTION, RESPIRATION, AND SECRETION,

## GIVEN AT THE ROYAL INSTITUTION,

### TO THE MEMBERS AND TO THE PUPILS OF ST. GEORGE'S HOSPITAL.

BY H. BENCE JONES, M. D., F. R. S.,

Physician to St. George's Hospital.

[Continued from page 27.]

## ON THE SALIVA AND PANCREATIC JUICE.

I showed you, in my last lecture, Gentlemen, some of the changes which the non-nitrogenous substances that exist in our food can undergo out of the body. I showed you the changes in starch, sugar, and fat. One of the most interesting changes, namely, the conversion of starch into sugar, I must again recal to your notice. I showed you that starch, which is an insoluble substance, could be changed, by the action of diastase, into a soluble gum, and also into sugar. I showed you how this took place in barley when malted; and I pointed out also what changes take place in starch when acted upon by alkalies and acids. If starch is mixed with moderately strong dilute sulphuric acid, and heated, and simply kept at a moderate temperature for some four or five hours, it undergoes a change—it loses all its properties, and becomes converted into dextrine and sugar. I have here some thin starch, sulphuric acid, and water. They have been heated at a moderate temperature for about four hours, and now no starch whatever will remain. I will pour some of the solution into a glass, and mix it with

sulphate of copper and liquor potassæ, and, without applying any heat, a reduction will take place, (as I told you it would take place, even in cold,) and the sub-oxide of copper, which you see here, is precipitated. I might show you, that there is no starch present by the iodide of potassium test. The quantity of sugar present is manifested by the deep colour of the blue solution, in which a reduction of the oxide of copper will, when heat is applied, instantaneously take place, showing that the starch is really converted into sugar,—a change consequent upon the action of the acid on the starch. If, instead of treating the starch with acids, I treat it with alkalies, no similar effect would be produced upon it. The patent mode of preparing common starch, consists in treating rice, for instance, with dilute alkali that is, treating a mixture of starch and albuminous substance with dilute alkali. The albuminous substance is thus separated and dissolved out, and the starch is unacted upon, and is thus obtained in large quantities. Dilute alkalies, then, have no effect upon starch, while acids have a powerful action; for not only has sulphuric acid this action, but hydrochloric acid and oxalic acid may be used by the manufacturer, for the purpose of changing starch into grape-sugar; but these acids require more time than sulphuric acid, in order to effect this change. I proceeded afterwards, in my lecture, to show some of the changes which take place in sugars by the action of ferments, that is, of albuminous substances in a state of active change; and ultimately I showed you the action of alkalies upon fatty substances; the saponification, or the separation of fatty matter into glycerine and fatty acids.

Having thus shown you the changes which take place out of the body, it is my purpose now to proceed to those which take place in the body. Just as, out of the body, the alkalies, and albuminous substances, as diastase and synaptase, aided by heat and moisture, act upon the different classes of substances which compose our food, so it is in the body. The agents which act upon the nitrogenous and non-nitrogenous substances in the body, are the same as those which act on them out of the body,—water, salts, alkalies, acids, ferments. These are present in the body, and have their proper re-actions upon the constituents of our food. These re-actions I hope to make in some respect clear to you in my subsequent lectures.

The salivary fluid, the gastric juice, the pancreatic fluid, the bile, and the intestinal fluid,—each contains the four classes of matter of which

I have so often spoken to you as present in food. If I take the bile or the saliva, I find that water is present, and fatty matter, as well as ashes and salts, and also albuminous substances. So if I take the pancreatic juice, or even the intestinal secretion, I can detect the same four classes of substances in it, and in all these different secretions; these are the efficacious substances which, acting upon the food, render it fit to nourish the body. I will, in my lecture to-day, take the saliva, and, if time permits, the pancreatic fluid, and show their composition and properties.

The latest analysis of the saliva is thus made by Frerichs:

*In Man Saliva, sp. gr.* 1004 *to* 1006.

| | | |
|---|---|---|
| Water | | 994·10 |
| Solids | | 5·90 |
| Mucus and epithelium | | 2·13 |
| Salivary matter | | 1·41 |
| Sulpho-cyanide of potassum | | ·10 |
| Fat | | ·07 |
| Alkaline and earthy | Chlorides, Phosphates, Oxide of iron | 2.19 |

Not only is it the latest analysis, but perhaps it is the best which exists. Still the numbers must not be regarded as absolute: it is probable that the siliva is constantly varying in composition; and probably no two specimens that I could take in this room would be absolutely the same; but these numbers are sufficient to show you the general composition of the saliva, and to give you numbers which approximate to the truth. The quantity of saliva secreted probably varies very much. At an average, it is about ten or twelve ounces a day; and in disease, two or three pounds. It is secreted at all times; and we see, in cases of paralysis, that it runs over the lip when the muscles are paralysed and cannot restrain it, and keeps running continuously; and we know that, in some cases of sore throat, in which the difficulty and pain of swallowing are great, each mouthful of the saliva, as it is formed, produces, at very short intervals, intense pain in the attempt to swallow it.

The nature of the food has a great effect upon the saliva. The motion even of the muscles of the jaws upon the salivary glands has also an effect upon it, increasing its quantity, and causing it to flow at any

time that the motion is made. If the food is very moist, but very little saliva is secreted. Thus one object of this secretion is made known to us,—that of moistening the food to enable it to be easily swallowed. The re-action of the saliva is very variable, even in health; generally it is alkaline, but this is by no means constantly the case; it changes at all times, especially in different stages of the digestive process; its alkalescence increasing while digestion is going on, and decreasing when it is over. In the specimen of saliva which I have here, and which was collected during digestion, you will observe there is a feeble alkaline re-action. Saliva may be acid, I have no doubt, from experiments I have made, and yet be perfectly healthy. When we remember that the salivary fluid is a mixture of the secretions of many glands,—for instance, of the parotid gland and of the submaxillary and sublingual gland, and the mucus of the mouth,—that its composition should be very variable will not appear remarkable. The alkalescence probably arises from the alkaline phosphate of soda, which can be shown to be contained in it, forming part of the salts of the saliva. The same alkaline phosphate which causes the alkalescence of the blood probably causes the alkalescence of the saliva. In addition to the water and alkaline phosphates, other salts are also present; and of these the most remarkable is that known by the name of sulpho-cyanide of potassium. This salt has this most beautiful and marked re-action; if I add to it a per-salt of iron an intense red colour is produced; and if I add again to this last a solution of corrosive sublimate, the colour immediately disappears. (Experiment.) Any solution which causes these re-actions may be concluded to contain sulpho-cyanide of potassium. I have here the product of nine ounces of saliva; I have evaporated it in a water-bath to dryness, and have thus driven off all the water. If I treat the residue with common alcohol, and keep it at a tolerably warm temperature for a few minutes, all the substances soluble in alcohol are dissolved. It must then be filtered, and the alcoholic liquid allowed to pass through. It is well, also, that this alcoholic liquid should be evaporated again to dryness. A residue is then obtained, such as you see before you. This may be dissolved in water. But a simple alcoholic solution will be sufficient for the purpose of testing the saliva for sulpho-cyanide of potassium. That this salt is really present in this saliva you will see, if I repeat the former test. (Experiment.) Meconate of iron gives the same deep red co-

lour as you have seen; but the colour does not disappear when corrosive sublimate is added. I find that it is not necessary to take so much as nine ounces of saliva for the purpose of this test. I have here a small quantity (not more than an ounce and a half of saliva,) and here is the watery solution obtained in the same way. The saliva was evaporated, to dryness, treated with alcohol, the alcohol again evaporated, and the residue dissolved in water. Even in this small quantity the re-action will, I have no doubt, be perceptible. You see how distinct the red colour is. This is the most remarkable body existing in the saliva, being closely related, as you perceive, to hydrocyanic acid.

| | | | |
|---|---|---|---|
| Cyanogen..... ... ... ... | | $C_2$ | N=Cy. |
| Hydrocyanic acid... ..... ..... | H | $C_2$ | N=Cy. |
| Sulpho-cyanogen..... | | $S_2$ $C_2$ | N=Cy. |
| Hydro-sulpho-cyanic acid... ..... | H | $S_2$ $C_2$ | N=HCsy. |

That such a body so nearly related to that most intense poison, prussic acid, should exist in the saliva, is, indeed, most remarkable. But, when it is remembered, that the saliva in some animals is highly poisonous,—that the serpent, for instance, from a peculiar salivary gland, secretes a most poisonous saliva, and that in other animals this secretion, when formed in a state of disease, becomes in the most intense degree poisonous, giving rise to hydrophobia,—it is not, perhaps, so remarkable, that, in the state of health, a substance bearing so close a relation to a poisonous substance should exist in it. I am far from saying, that the poison of the serpent, or hydrophobia, is related to hydrocyanic acid or prussic acid; it is probable they are much more complex bodies. Sulpho-cyanide of potassium itself does not appear to be intensely poisonous. Dogs have been given from thirty-one to sixty-two grains of it, but it seemed to pass through their system, partly changed and partly unchanged, without producing any decidedly poisonous effects upon the animals. After oil of mustard has been eaten, (which is a highly compound body containing sulphur,) it is said that the sulpho-cyanogen is found to be increased in the saliva. Eberle, a German physiologist, has stated, that in violent anger, the character of the human saliva becomes poisonous, and that the quantity of sulpho-cyanide of potassium is increased. This may be a matter of doubt; but in whatever way we look at the substance, its existence in the saliva is certainly remarkable; and it is also most extraordinary that it can be detected with such ease. That its existence should ever have been

doubted (for it has been doubted) could not have arisen from the want of care on the part of the operator, for it requires no careful manipulation ; but from the circumstance, that in some rare cases it may not be present. As far as my own examination has gone, however, I have always been able to detect this substance.

The fatty matter of the saliva is a body which contains phosphorus, like the fats of the brain and some of the blood. There is a very small quantity indeed present in the saliva, and I have very little to say respecting it.

I pass now to the salivary matter,—the albuminous substance which exists in the saliva, which has been called the salivary diastase, because it has a re-action and a property resembling that body. Diastase, you remember, acts upon starch, and causes it to change into sugar ; and the salivary matter of the saliva has the same property. This observation was first made in 1831 by Leuchs, a German physiologist, who discovered that starch was changed into grape-sugar when treated with saliva. To make certain of the test, the saliva should be filtered, evaporated, and boiled with alcohol, and separated from all other matters. But it is sufficient for my purpose to show you this re-action with saliva directly. I have a quantity of saliva which has been collected during two or three days, and it will, I have no doubt, answer my purpose, though fresh saliva is perhaps better. If this saliva be merely heated with starch, a change in the composition of the latter ensues ; the starch takes up water, and becomes converted into grape-sugar. The change takes place almost instantaneously. It does not require any alkalies as has been stated, nor is it requisite that it should boil any length of time. (Experiment.) I will heat this thin starch with saliva only a few moments, and now the change has occurred. That this change has actually taken place, you will see by the ordinary test for sugar,—sulphate of copper and liquor potassæ. You will see that a blue colour is caused, and, on the mixture being boiled, a rapid reduction of the copper takes place, which indicates the presence of grape-sugar. I cannot conceive a more beautiful experiment than this instantaneous action of the salivary diastase upon starch. That no sugar previously existed in the starch, I might, if time permitted, show you, by testing the starch with sulphate of copper and liquor potassæ. You might, perhaps, think that this reduction of the oxide of copper was

occasioned by the mucus or some other substance in the saliva, or by the boiling temperature causing the saliva to effect a change, which it could not effect at the temperature of the body ; but experiments can prove that the saliva itself, by itself, has no power of quickly reducing the oxide of copper ; I may make the experiment with the saliva alone, or with the starch alone, and, as you see, no reduction takes place ; but, if I take a little of the same starch, and put it into the mouth, where it can be mixed with the saliva, and allow it to remain for two minutes at the temperature of the interior of the mouth, and then putting the mixture of saliva and starch into a test tube, mix it with a drop or two of solution of sulphate of copper and liquor potassæ, and leave it, without any application of heat, to stand for a few hours, reduction of the oxide of copper will occur. In these test tubes I have repeated this experiment with starch that has been held in the mouth two, three, four, and five minutes ; and you see, by the quantity of oxide of copper which is reduced, that the longer the saliva is in contact with the starch in the mouth the more sugar is formed.

If you wish to obtain the sugar out of the mixture of starch and saliva, distilled water should be added, and the whole well shaken ; the liquid should then be filtered ; the solution which passes through the filter should be evaporated to dryness, and treated with boiling alcohol, which dissolves the sugar, and leaves albuminous matter undissolved. The alcoholic liquid should be evaporated to dryness, and dissolved in water. Thus the salivary matter, mucus, and much extractive matter, as it has been called, can be separated from the sugar, and the re-action with sulphate of copper and liquor potassæ will be most evident.

I have told you that that it is the salivary matter which produces this change of starch into sugar. Under what circumstances, then, is the action most decided ? If saliva is exposed to the air, it loses its property of effecting this change ; but if it be boiled it still possesses this property. If the vegetable diastase be boiled, it loses its property of changing starch into sugar ; not so with the salivary diastase. Alcohol, when present, does not change the action of the salivary diastase, nor do mineral acids, even though strong, deprive it of its properties ; and gastric juice, even when strongly acid (this is a most important fact, as I shall show you in my next lecture), does not in the least hinder it. Alkalies have no effect in changing starch into sugar ;

it is not the alkali of the saliva which produces the change, but it is albuminous substances which effect it. The fluids of the mouth, as a whole, possess this action strongly. When the substance is attempted to be isolated by precipitating the salivary matter of alcohol, it seems that in some degree a change takes place in it, and it loses this power of reducing the starch and causing it to change into sugar. It is said that the pancreatic fluid effects this change even more intensely than the saliva; but, in a single experiment which I have made, it did not appear to me to be so active. The gastric juice, if alone boiled with starch, has no such action as the saliva or the pancreatic fluid. But it is found that gelatine, albumen, even parts of the brain, the heart, liver, lungs, and spleen, if left to stand until they undergo certain stages of decomposition, produce this change, though not nearly to the same degree as the healthy salivary matter.

I must say one word on the action of the saliva upon other non-nitrogenous substances which form our food. If saliva is boiled with cane-sugar, the latter undergoes no change; in twenty-four hours cane-sugar is not changed into grape-sugar; if gum or cellulose (which contain no nitrogen) are acted upon by the saliva, they undergo no change; it is upon the starch that the action of the saliva is most manifest and decided.

Lastly, I come to the action of saliva upon nitrogenous substances. It has been thought that the saliva has some chemical effect upon the albuminous substances which constitute our food. The best experiments, as far as I can judge, lead to the belief that the saliva has no such action: it softens the food, it tends to make it more easily swallowed, but it produces no chemical action upon the albuminous substances. The great chemical use of the saliva is, to act upon the starch. It has been said that all the salivary glands have been extracted, or the ducts tied, and yet digestion has gone on well. This experiment, to me, is not only cruel, but worthless. We have seen that the chief action of the saliva is upon the starch; but if there is another substance in the body besides the saliva which has this action, such experiments must be useless, and it would be far better if they had never been made. The quantity of saliva bears no distinct and definite relation to the quantity of starch which is eaten; therefore we cannot look upon the saliva as the sole active agent in producing the change I have described. The most necessary object of the saliva is, as I have said, to

moisten the parietes of the fauces and œsophagus, to enable the food to be swallowed, and not to effect the chemical change of the starch into sugar. This change is most important and necessary; but two secretions are provided for the purpose of effecting it. If moist food is eaten digestion can take place where no salivary fluid is mixed with the food; and we cannot, therefore, assume that the saliva is absolutely essential for the purposes of digestion. The food remains in the mouth far too short a time for a full change of starch into sugar to take place; and although, when the starch and saliva pass into the stomach, a further action takes place and the gastric juice, though it neutralises the alkalescence of the saliva, does not stop the chemical action of the diastase upon the starch, but admits the change still to go on in the stomach, as I shall have occasion to demonstrate at my next lecture, yet, in conclusion, let me repeat, that the chief use of the saliva is to moisten the food; and this can be proved in the following way:—If certain quantities of food are taken and weighed before they are eaten, and after they pass down the œsophagus removed through a fistulous opening and re-weighed, the actual increase of saliva will be found to be directly proportioned to the degree of moisture of the food. Thus if an ounce of food is taken perfectly wet, and is weighed as soon as it passes down the œsophagus to the stomach, (such experiments have been made,) no addition of saliva will have taken place; but if the food be taken dry it will have gained two or three times its weight. We may sum up the actions of the saliva thus;—The first object is to moisten the food. It dissolves, also, easily soluble substances. It exalts the taste, for perfectly dry substances are found to have no taste. The second great object of the saliva is to change the starch into sugar. To make an insoluble substance soluble.

It does not act as a stimulus to the gastric juice; for it does not appear, when saliva is put into the stomach alone, that gastric juice is secreted in consequence. It undergoes remarkable changes from medicine and disease; but it would take far too much time to dwell upon these in the present lecture.

I now come to a secretion which is closely related to the saliva, at least in one of its actions,—the pancreatic fluid. I have here (through the skill of Mr. Pollock) a small quantity of pancreatic fluid, obtained,

as it always has been obtained, from a living animal. This experiment of obtaining it from living animals is no recent discovery. In Dr. Fordyce's "Treatise on Digestion," the second edition of which was published in 1790, the following remarkable passage occurs at page 70:—

"The pancreatic juice is another fluid. It is secreted by the pancreas,—a gland not unsimilar to some of the salivary glands. This gland has no reservoir, so that it is difficult to come at any quantity of the juice secreted by it and thrown into the duodenum. Upon inserting a small quill into its duct in a living dog there flowed out a colourless fluid, almost watery, having a saltish taste; and, on letting it evaporate upon a plate of glass, crystals were seen evidently of common salt and sal ammoniac, as far as we could judge by their figure, which was confirmed by applying a little of this juice to solution of silver, and making other such chemical experiments as we can make on very small quantities of matter; which, however, proved rather a ground of conjecture than satisfactory proof. Besides these salts, and probably the other salts commonly contained in the blood, there is found, upon evaporation, a colourless mucilage, which redissolves in water, but whose compound with water is not very diffusible through water, although somewhat more readily than the saliva. These are all the properties that I could determine in the small quantity that was thus collected. It is further to be observed, that the secretion did not take place in the natural state; for the quill inserted into the duct might stimulate it, and occasion a different secretion, at least in some points, from that which naturally takes place."

This probably is the first statement containing any accurate information on the pancreatic fluid. It was obtained then, as it is now, for the purpose of experiment, from a living animal. M. Bernard's experiments upon the pancreatic juice have excited much attention. To obtain this fluid an incision is made in a dog (as in this instance) under the influence of chloroform; a tube is introduced into the pancreatic duct, and the fluid is allowed to collect in a small bladder at the end. Here is the apparatus, and the skill with which I saw M. Bernard introduce a tube into the duct can only be obtained by considerable practice. My diagram shows you the analysis, by Frerichs, of the pancreatic juice.

*Pancreatic juice of Ass.*

| | |
|---|---|
| Water | 986·40 |
| Solids | 13·60 |
| Fat | 0·26 |
| Alcohol extract | 0·15 |
| Water extract albumen | 3·09 |
| Chlorides, Phosphates, Sulphates | 8·90 |
| Carbonate and phosphate of lime and magnesia | 1·20 |

You will observe it contains more solid matter than the saliva. Hence, probably, it is for some other purpose than to moisten the passages. In health it is, or rather should be, as Fordyce tells us, a perfectly clear and colourless fluid. It possesses an alkaline re-action, as you see in this specimen, by the re-action on test-paper. The peculiar properties of this juice depend on an albuminous substance, something like the salivary matter, which is not perfectly coagulable by heat, and which, when precipitated by alcohol, dissolves easily in water. It contains also a butter-like fatty matter. It contains no sulpho-cyanide of potassium; if I put it through the process I showed you before for the saliva, I should detect no sulpho-cyanide of potassium in it. The quantity which is secreted is probably very variable. The secretion takes place only when the food is in the stomach and digestion is going on. Frerichs, who has written by far the best work that has yet appeared on digestion, collected from an ass, in three quarters of an hour, 387½ grs.; and in a large dog, in twenty-five minutes, 46 grs. The peculiar property of this pancreatic fluid is similar to that which I have shown you the salivary fluid possesses. If it be mixed with a little starch, the same change into sugar takes place which you have already seen. In an experiment which I made yesterday, the reduction which took place was not so quick, so instantaneous as with saliva; it is said the saliva acts far less energetically than the pancreatic fluid; but in my experiment, the action of the latter was not so rapid as that of the saliva.

M. Bernard has made the remarkable statement: that the pancreatic juice is for the purpose of changing the neutral fatty matters taken as food, and converting them into fatty acids and glycerine,—that a saponification always takes place in consequence of the action of this fluid

on fatty matters. He has stated this very decidedly, and has made some very beautiful experiments for the purpose of showing it. They are experiments which do not satisfy me; and experiments, moreover, leading to opposite conclusions have been made by Frerichs. I hold, also, in my hand a little treatise "De Adipis Concoctione et Absorptione," by Dr. Ed. Lenz, published at Dorpat, in 1850, which gives the best experiments that I have met with. It contains statements of the action, out of the body, of the pancreatic fluid, alone or with bile and gastric juice, upon butter or oil, alone or mixed with starch. These experiments confirm me in my opinion, that this fluid has no peculiar power to change fatty matters into fatty acids and glycerine—that it has no specific power of saponifying the fats taken as food. That saponification to any considerable extent actually takes place in the stomach, or in the bowels; or even in the lacteals, is to me very doubtful. It is quite certain that a great portion of the fat which at the temperature of the body becomes fluid when taken as food, by being mixed with the pancreatic fluid, which is an albuminous liquid, with the bile, which also is a soapy liquid, and with the intestinal secretion, is minutely subdivided, and, being made into an emulsion, becomes capable of being taken up. This appears to me far more probable than that the fatty matter is changed by the pancreatic fluid into fatty and glycerine. That the pancreatic fluid is not necessary to enable fatty substances to be absorbed, has been shown thus by Frerichs and Lenz. After they tied the pancreatic duct in cats, they were given no food for from twelve to twenty-four hours, so that all the pancreatic juice which was in the intestine might have passed out of it. Food, consisting of milk, fat, flesh, or butter, was then given; and, after some hours, usually from four to eight, the animals were killed; and they found, over and over again, that the lacteals and the thoracic duct were full of milky chyle. Frerichs put a ligature round the small intestines of animals (who had eaten nothing for some time) much below the opening of the bile and pancreatic ducts; he then injected milk, or olive oil, or an emulsion of albumen and oil, into the intestine below the ligature, and; after two or three hours, he found the lacteals quite full of milky chyle. Experiments are detailed, in which butter was given in quantity to cats, but not one trace of the volatile acids of butter could be found in the bowels, in the chyle, blood, or bile. Frerichs also found that other animal fluids, like the pancreatic juice, as soon as

they began to undergo decomposition, effected as much change of fatty matter into fatty acid and glycerine as the pancreatic fluid did. He also states, that the pancreatic juice, setting aside its chemical action, does not make a better emulsion,—that it does not divide the fat or oil better than other animal fluids. He found that when acidulated with hydrochloric acid, it had no action whatever on fat or on albumen,—that it had no power to act as a solvent of the albuminous part of our food. He states, that its uses are to change the starch into sugar, and to promote the secretion of the bile; that, with the aid of the bile and the intestinal fluid, it effects, though it does not solely effect, a fine division of the neutral fat which is fluid at the temperature of the body; but, further than this, he says there is no peculiar specific action of the pancreatic juice. The pancreas seems rather to be a supplementary gland to the salivary glands intended to insure a full change of all the starch taken into the stomach. At present, I cannot admit that its action on fatty substances in digestion is proved.*

Here I must bring the subject of the saliva and pancreatic juice to an end. In my next lecture I shall occupy your attention with the solution of the albuminous principles, by more especially inquiring into the action of the gastric juice.—*Medical Times, May* 31, 1851.

(*To be continued,*)

---

*The Anatomy and Diseases of the Prostate Gland.* By John Adams, Surgeon to the London Hospital, &c.—*Reviewed.*

It is a consideration not unworthy of remark, that as inflammation of the Larynx is perilous from the accident of its position, in a degree quite disproportionate to its intensity; so is human life rendered miserable by diseases of the Urinary organs, that are quite out of proportion in their nature to the effects which they produce on the constitution at large. It may truly be affirmed, that the prostate—a gland, the use of which is hardly as yet definitely determined—which in many animals serves at least but a temporary purpose, growing larger or de-

* Since this lecture was given, through a mutual friend, I have brought Dr. Lenz's experiments to M. Bernard's notice. He considers that further researches will prove that his discovery is correct.

clining as the sexual appetite is excited or palls—and which is evidently not even essential to the perfection of this process, as is proved by the persistence of the procreative faculty when the gland is nearly destroyed by disease,—becomes, in advanced years, the source of not less danger to life, and of infinitely more misery, than any other structure in the whole body. That the lives of so many of the best and wisest of our species should have been shortened and embittered by disease of an organ of such apparently trifling importance, and that our art should have made so little progress in preventing and relieving the sufferings thus occasioned, are reflections not a little humiliating, and not a little salutary to a sanguine mind. Nor can it occasion surprise, that where so little is known, so much should be written. The almost universality of prostatic disease in advanced life, and the known difficulty of its cure, hold out inducements to an unscrupulous practitioner that are not to be resisted; but the very same considerations act as restraints upon the professions of the genuine lover of science.

It therefore becomes the duty of those who undertake to watch over the surgical literature of the country, most jealously to examine all works upon the more popular urinary diseases, that the mere practice-hunter may be detected and exposed, and that the public may be warned against arts that are as dishonest as they are injurious to society.

The first twenty-five pages are devoted to the Anatomy and Physiology of the prostate gland. This part of the work, with some other passages, has already appeared in the 'Cyclopædia of Anatomy and Physiology.' Of the third lobe, which is so interesting to us as surgeons, Mr. Adams states that he believes it to be occasionally altogether wanting, and, when present, to vary in size between a simple elevation of glaudular structure, and a mass so large as to appear a distinct growth. He has also no doubt that the urethra is completely surrounded on all sides by the prostate; for he has examined with the microscope that debatable ground which is situated over the upper surface of the urethra, and finds it not membranous, as some think, but identical in structure with the rest of the organ, and even sometimes containing calcareous concretions. The intimate structure of the prostate gland is not complicated. Mr. Adams thus describe it:

"Briefly, it may be said to be composed of minute terminal follicles, opening into canals or tubes, which unite together to form ducts, which open in an oblique manner on the prostatic portion of the urethra. The orifices of the

prostatic ducts are situated principally close to and around the most elevated portion of the veru montanum, in the form of a crescent, the larger ducts on the side, and the smaller on the posterior aspect of this body. If a longitudinal, vertical section is made, many of the ducts of the prostate are seen passing upwards, towards the under part of the veru montanum, in a straight direction: the interior of some of them being slit open in the section, whilst others pass obliquely beneath the mucus membrane for some distance prior to their termination. They vary in number from ten to fourteen, but as many as thirty have been seen. Their diameter ranges from one-sixth to one-fourth of a line. It sometimes happens that two or more ducts unite, and open by one common orifice, large enough to admit the end of a small probe." (pp. 10, 11)

Each of the ducts must be separately injected, for they have usually no communication with each other, but terminate separately in minute cells or follicles. An intermediate tissue fills up the spaces between the follicles, this tissue, according to Quekett, being fibro-cellular, and according to Dr. C. H. Jones, white fibrous tissue, with numerous bands, resembling those of organic muscle. Kolliker also has described a large quantity of muscular fibres as entering into the structure of the prostate. Mr. Adams does not favour us with as minute an account of the anatomy of the diseased prostate as might have been expected from his evident familiarity with the microscope, and states nothing with sufficient certainty to call for reproduction in these pages. This is the point on which we most desiderate information, and we shall return to it again, to give an account of Professor Rokitansky's recent researches.

The *secretion* of the prostate gland can only be examined microscopically, not being obtainable in sufficient quantity to be submitted to chemical analysis. After death it is well known to be of a milky hue, but Mr. Adams thinks it is probably clear and transparent when first secreted. Setting aside all fanciful notions of its use in diluting the semen, or in defending the ejaculatory ducts from the urine, the author throws out the following ingenious suggestion:

"I think the fact of the prostatic secretion being naturally, as I believe, acid, is a circumstance of some interest. The secretion of the testes is well known to be alkaline. Is it not probable that the reaction of the prostatic on the seminal fluid may be of use in the maintenance of the fluidity of the latter? The idea is somewhat confirmed by the fact, that in women the acid secretion of the vagina prevents the coagulation of the menstrual blood, and thus favours its discharge. This has been proved by Mr. Whitehead, who found, that if the menstrual fluid was received directly from the os uteri into a speculum, it coagulated like ordinary blood." (p. 25)

The author also writes at some length respecting the "*sinus pocularis*" and the "development of the prostate and vesicula prostatica;" but our limits forbid us to dwell now on these points, and we pass at once to the diseases of the prostate.

Here *inflammation* holds a chief place. It is a common consequence of acute gonorrhœa; but we are unable altogether to agree with Mr. Adams's opinion, that inflammation of the prostate is often due in these cases to attemps at rapidly curing a clap.

"The internal use of copaiba, cubebs, and the application of astringent injections, in proportion as they arrest the progress of the disease in front, tend to give rise to it at the back part of the canal, or to increase it if already existing in this region of the urethra." (p. 29.)

There are few practical points upon which we are more convinced, than that gonorrhœa is a disease confined, in the first instance, exclusively to the anterior part of the urethra, extending probably at furthest not more than two inches or two inches and a half from the meatus, and capable of being safely cured at its onset by the injection of nitrate of silver, in the proportion long ago recommended by Ricord, of one grain to eight ounces of water; and it has not fallen within our experience to find this method of cure to be followed by prostatic inflammation.—On the following point however, we think Mr. Adams very probably correct:—

"I have little doubt," says Mr. Adams, "that the discharge of what is very commonly termed a gleet frequently depends on an increased and altered secretion of the follicles of the prostate, and hence the great difficulty so often experienced in the cure of gleet by the use of astringent injections; for it is difficult, nay, even often impossible, to reach by these means the true seat of the disease; whereas the exhibition of the chia turpentine in five-grain doses often puts a stop to the discharge instantly; acting, as I presume it does, specifically on the prostatic portion of the urethra, and on the ducts and follicles of the prostate itself." (p. 35.)

Mr. Adams's treatment of an inflamed prostate gland is such as is commonly recommended in text-books—namely, leeches, and the moderate use of mercury. He details the particulars of a case in which the plan was followed by himself, not certainly with brilliant success, for the gland suppurated and discharged the contents of the abscess by opening in othe urethra, and left behind it symptoms, which now, after the lapse of nine years, have not ceased to tease the patient. To us the result is not surprising. Inflammation of any glandular

structure, treated with repeated leeching and the internal administration of mercury, even as Mr. Adams recommends short of mercurialization, and merely as a febrifuge, is almost sure to result in suppuration. The *local* application of mercury, however, has a remarkable effect in curing glandular inflammation, strikingly contrasted with its effects when administered internally. There is no better proof of this, than the results of thus treating an inflamed breast. Leeches &c. will almost certainly favour suppuration; but if the breast be covered with the strong mercurial ointment, thickly spread on strips of lint, and the part be enveloped in cotton wool, most probably, if the treatment be adopted early, the inflammation will be entirely resolved: or else, if the disease do go on to suppuration, that suppuration will be much circumscribed. The tincture of iodine acts in the same way, in resolving glandular inflammations, as is well known in the treatment of buboes; and though not so certain in the cure of the prostate gland, on account of its position, and distance from the surface, yet one or other of these two means may be used, with a better chance of success than the leechings recommended by Mr. Adams. Tartar emetic, in depressing doses, also acts here, as it does in inflamed testicle, with remarkably good effect.

Mr. Adams's remark upon chronic prostatitis from masturbation are graphic and sensible, offering, we believe, the most correct account of the disease that has ever appeared in print; and as we are unable to reproduce it entire in our pages, we shall avail ourselves of the accompanying case from Mr. Adams's work, which serves to illustrate his observations:

"Whilst writing the above, a gentleman, apparently in perfect health, called on me in a state of great distress of mind, having been induced to consult an advertising quack for supposed spermatorrhœa. I found that the only disorder he laboured under was an occasional nocturnal emission, which took place about once in a fortnight or three weeks; this, together with the escape of half a teaspoonful of glairy fluid during the evacuation of the rectum when the bowels were costive, although his general health was not affected rendered him morbidly sensitive to his supposed infirmity, and induced him to seek advice. The empiric made a great parade of examining his urine, and having received some of it into a glass, he introduced an hydrometer, and showed him what he said was the seminal fluid collecting around the bulb. When I examined this gentleman with the catheter, I found that the prostatic portion of the urethra was rather more sensitive than natural, and that the

orifice of the urethra at the glans was a little reddened, and the lips of the urethra agglutinated by mucus. I examined the rectum with my finger, but could detect nothing abnormal about the prostate or neck of the bladder. I directed him to use a cold water injection night and morning, to take the ext. connii, grs. v, omni nocte, and a little liq. potassæ in infusion of gentian. His urine was acid, but not especially so." (pp. 56, 57)

In reference to these cases the author also observes:

"I cannot believe that any escape of seminal fluid ever happens without the characteristic signs of ejaculation, however modified; and in these cases such signs are frequently altogether wanting." (p. 53.)

The so-called cases of spermatorrhœa are very common. The real disease, which might be called paralysis of the genital organs, is, in our experience, equally rare. The first-named is readily enough cured by the application of the argentum nitratum, as recommendad by Lallemand; the cause of the last lies deeper, and is little influenced by topical remedies.

The experience of a large hospital has brought us numbers of these cases; and we deliberately repeat our conviction, that spermatorrhœa does not really exist in a tithe of the examples in which it is predicated. The constant escape of the seminal fluid with the urine, as often described, is, we believe, a fallacy; and as for the evidence which is sometimes adduced in support of such an opinion, that of a greasy pellicle floating on the top of the urine, everybody knows that this appearance is commonly occasioned by the presence of minute crystals of the phosphate, and that patients who think themselves impotent, or about to become impotent, are persons extremely liable to mental depression, and phosphatic urine with its rainbow colour and rapid decomposition. Mr. Adams thus accounts for the serious effects which the habit of masturbation induces in the system:

"The first effect resulting from the frequent seminal emissions thus voluntarily induced by the patient without the stimulus of natural copulation, is an irritable state of all those parts sympathetically called into action, as the extremities of the *vasa ejaculatoria* and adjacent portion of the urethra, and the prostate gland: the urethral membrane at this part is endowed with exquisite sensibility; I have no hesitation in affirming it to be the most sensitive part of the canal. This sensibility obviously depends on the large supply of nervous filaments distributed about the neck of the bladder; for although it is not possible to trace with the scalpel the ultimate termination of such nervous filaments, their destination must be the point referred to. Hence arises the pain,

or at any rate the unpleasant sensation, experienced on the introduction of the catheter even in the healthy condition, and the acute and stinging sensation when inflammation exists in the canal. Through this nervous distribution arises the sympathy of this part with the bladder, vesiculæ seminales, and testicles, on the one part, and with the glans penis on the other; a sympathy illustrated by the desire the patient experiences to evacuate the bladder the moment the bougie or catheter reaches the sensitive part; a sympathy illustrated also by the seminal discharges arising from the irritation of this part by the introduction of foreign bodies, when the natural irritability of the sentient papillæ of the glans penis has been exhausted by the long-continued practice of masturbation, of which the unfortunate case mentioned by Richerand affords so graphic an example. This nervous supply, derived both from the cerebro-spinal and ganglionic systems, affords a ready clue to the explanation of those general phenomena attending these cases; thus, to speak of natural sympathy, the fainting and sickness, so often induced by the first introduction of the bougie, result from the irritation propagated to the heart and stomach by the ganglionic nerves: hence, also, to speak of unnatural sympathies, depend the pain in the loins in onanism, and the deep pain in the dorsal region. The sympathy between the testicles and kidneys is still further anatomically explained by the nerves to both being derived from the same source: the irritation of the kidneys, as exemplified by the copious secretion of limpid urine, results from the same cause; so further, the general nervous exhaustion, as shown by the weakness in the gait, by the *tinnitus aurium*, by the *muscæ volitantes*, and by the general indisposition to mental exertion under the same condition; it is the derivation of the nerves of the testis from the renal plexus, and the connexion of the latter with the cerebro-spinal axis in the lumbar region, that explain the draught, so to speak, upon the central nervous system, which is constantly taking place under the repeated and unnatural excitement of the organs of generation thus constantly indulged in." (pp. 50—52.)

His treatment of these cases, besides the local application of caustic consists in the exhibition of conium and soda in the infusion of gentian, cold bathing, fresh air, and almost entire abstinence from alcoholic fluids. In reference to wine, he very sensibly observes:

"I believe the internal use of alcoholic drinks to be most injurious, and that it is infinitely better to deter the patient from the use of wine, or even porter, altogether, than to give them to the extent of stimulating the heart's action."

In our own practice we have found much benefit, after quieting the patient's mind, and getting his secretions into good order, from a mixture containing small doses of the tincture of cantharides and the

sesqui-chloride of iron in a bitter infusion. With this it is often necessary to give an opiate at night, and to prohibit the patient entirely from taking any sort of *beer*, which we regard as far more injurious than wine or spirit. On such a plan as this it is often unnecessary to resort to the nitrate of silver, which, we suspect, sometime leaves behind it unpleasant results. Our author's observation conclude thus :

" This is a subject of much delicacy, and by many will be regarded, probably, as beyond the scope of ordinary medicine ; I cannot coincide in that opinion, and I am fully convinced that a careful attention to this subject will well repay the trouble devoted to it, and that good effects will result to society from its consideration ; the disease being thus placed in the category of those conditions which are amenable to medical treatment. (p. 60.)

We hope and believe that the day for such false delicacy has passed, and that all now recognise the proper object of the healing art—the endeavour to alleviate every ill that human flesh is heir to. To the wise and honest practitioner, no disease is so trivial, or disgusting, or painful, as to be unworthy of attention. Everything suffered by a fellow-creature interests him ; from flatulence to fever, from corns to compound fracture, there is nothing that he despises.

Hypertrophy is the great change to which the prostate gland is obnoxious, and is so common after the age of fifty, that Mr Adams says it may be almost regarded as one of the necessary contingencies of old age, supervening in a manner wholly independent of inflammation. The condition of the bladder varies remarkably in this disease, occasionally, it is so contracted and thickened as to hold but a very small quantity of water, and in other cases is so much expanded as to hold many pints.

In the first of these conditions, Mr. Adams believes that there has been inflammation of the prostate, extending to the bladder, and *sudden* increase in the size of the gland ; and in the second, that the increase has been gradual, and accompanied by compensative dilatation of the bladder. This dilatation, proceeding in every direction, presses sometimes on the rectum, and produces obstinate constipation, giving rise to that pouch which is so convenient a receptacle for small putrefying quantities of urine, or for calculi. There often happens, also, a hernia of the mucous coat of the bladder through its thickened muscular fibres, which materially aggravates the patient's danger ; for these cysts or supplementary bladders answer admirably to contain the urine,

but, being destitute of muscular fibres, are unable to expel their contents, which, rapidly decomposing, inflame the bladder, and not unfrequently set up the peritoneal inflammation, which finally kills the unfortunate patient. The author lays particular stress upon what is called the *fluttering blow of the bladder*, as a pathognomonic sign of this condition; and as this is an important practical point, we shall present our readers with his exact words:

"As this is a subject in a great measure passed over by writers on diseases of the urinary organs, I shall take the liberty of dwelling somewhat upon it. So far as I have observed, these cases are usually attended with pain about the region of the pubis, and in the perineum, and along the urethra, especially after the evacuation of the bladder; there is generally more or less irritability of this viscus evinced by a frequent desire to pass water; hence the surgeon's attention is directed to the state of the bladder; the catheter is introduced—it may be without diffiulty, or at any rate with no more difficulty than commonly attends its introduction when the prostate gland is hypertrophied; and on the escape of some urine, the flow of water suddenly stops, and *a fluttering blow* is struck against the point of the instrument, as if a solid body came in contact with it: the surgeon, believing that he has drawn off the whole of the urine, is about to withdraw the catheter, when a small quantity more escapes, and perhaps the blow is repeated. The impression first conveyed to the mind of one unaccustomed to it is, that there is a stone in the bladder; but the experienced hand at once detects the nature of the case, or at any rate the idea of the existence of stone is at once removed from his mind. Mr. Guthrie suggests that these are the cases which have been so often mistaken for stone in the bladder, and in which the operation for lithotomy has been attended with a cure of the symptems from the division of the neck of the bladder. Although such may have been the case occasionally, I am under the impression, that in those cases in which lithotomy has been unnecessarily performed, there is an hypertrophied condition of the *detrusor urinæ*, and that the deceptive sensation which favours the impression that calculus exists, arises from the grating of the point of the sound against the hard *rugæ*, of the bladder, formed by the columns of this muscle increased in size and density. It is not long since that I was in attendance on a valued medical friend, who was labouring under all the symptoms of hypertrophied prostate, with its concomitant horors, the disease approaching rapidly a fatal termination, when his medical attendant in the country assured me that he had detected the cause of his disease in the existence of a stone in the bladder. On introducing the catheter, I was at once convinced that the opinion was erroneous: I felt the fluttering blow upon the catheter, and ventured to diagnosticate a considerable pouch in the bladder: my opinion was verified on the examination of the body after death, which took place soon after," (pp. 76, 77.)

The morbid anatomy of the hypertrophied prostate, as we before said, is not much elucidated by Mr. Adams; and he does not seem acquainted with Rokitansky's observations upon the cystic origin of much of the abnormal gland-structure to which he refers. Of these and of his own inquiries we take the following account from Mr. Paget's lectures:

"We owe to Rokitansky the knowledge that the tumours in the prostate gland, which were commonly, and till lately even by himself, regarded as fibrous tumours, are composed of tissues like those of the prostate gland. In enlarged prostates they are not unfrequently found. In cutting through the gland, one may see amidst its generally lobed structure, portions which are invested and isolated by fibro-cellular tissue, and may be enucleated. Such portions have, I believe, been sometimes regarded as tumours, or as portions of prostate gland, in operations of lithotomy. They lie embedded in the enlarged prostate, as sometimes mammary glandular tumours lie isolated in a generally enlarged breast. They look like the less fasciculate of the fibrous tumours of the uterus; but to microscopic examination they present such an imitation of the proper structure of the prostate itself, that we cannot distinguish the gland-cells on the smooth muscular fibres of the tumour from those of the adjacent portions of the gland. Only their several modes of arrangement may be distinctive."

Sometimes these new glandular growths are completely isolated from the prostate. Thus, Mr. Paget mentions a specimen sent to him by Mr. Wyman, in which a mass that measured $2\frac{1}{2}$ inches by $1\frac{1}{2}$, was found "lying loose in the bladder, only connected to it by a pedicle, moving on this like a hinge, and when pressed forwards, obstructing the orifice of the urethra;" yet neither in its general aspect nor in its microscopical characters could this be distinguished from prostatic substance.

The observations of Mr. Adams that chiefly bear on this point, are as follow:

"Putting out of our consideration all those accidental conditions which now and then accompany the enlargement, as fibrous tumours, the deposit of scrofulous and scirrhous tubercle, we may regard the disease as an universal increase in the natural elements of the gland: thus, when examined by the microscope, its blood-vessels are found numerous and large, its ducts and follicles are immensely increased in diameter, they are loaded with concretions, and there is a remarkable increase in the deposit of the white fibrous and muscular elements which fill up the spaces between the follicles. Occasionally we find large tumours developed in the lobes analogous to the fibrous tumours which occupy the female breast, and which are constituted of a genuine hyper-

trophy of the glandular tissue. Sometimes the enlargement depends on the growth of distinct oval and circumscribed tumours growing within the gland. And not uncommonly true hypertrophy of the prostate is accompanied with the growth of a large projecting tumour growing into the bladder, and having no immediate connexion with the gland itself, but attached to the neck of the bladder, and which is often mistaken for an enlargement of the prostate. The mistake is not of the slightest moment, as the character of these tumours cannot be verified except by microscopical examination after death. They are composed of fibrous and cellular tissue." (pp. 88, 89 )

He also lays much stress on venous congestion induced by venereal excitement, as a common cause of the sudden retention which attacks old men with enlarged prostates.

The mode of treatment to be followed in cases of hypertrophied prostate gland is clearly enunciated by the author ; though, of course, his remarks are not strikingly novel. He prefers that the patient should be in the recumbent posture when introducing the prostatic catheter, as, in case the chief disease is of the third lobe, it is liable to fall down and entangle the point of the instrument, should the operation be attempted in the erect position. We are somewhat surprised, however, to find that Mr. Adams makes no mention of the flattened catheter, invented, we believe, by Mr. Wormald, for use in extensive enlargement of the lateral lobes ; but as we find that he has himself contrived an instrument for the same class of cases, it is no wonder that he should entertain a natural affection for his own offspring. Mr. Adams's invention consists of a silver instrmuent, with an opening at the end, sufficient to permit a long elastic catheter to be passed through it, when the silver catheter has reached the prostatic part of the urethra.

Both as an example of the admirable vein of good sense which runs through Mr. Adams's work, and also because his position in the profession, and his connexion with one of the largest and most flourishing of the metropolitan hospitals, entitle his remarks to peculiar attention, we shall bring under our reader's notice some observations which he makes on the subject of the neglect of *Practical Instruction* in our scientific medical schools. They are called forth *apropos* of introducing the catheter ; and are so true and forcible as to require, we should think, but little recommendation beyond their intrinsic merit. Again and again would we urge the parents and guardians of medical stu-

dents seriously to consider whether it is possible for all that is *professed* to be actually taught in three years commonly devoted to metropolitan education. How much is it to be wished, that they would select hospitals where the medical officers really take pains to impart practical bed-side instruction to their pupils, rather than such as offer their chief inducement in the shape of a long array of worthless prizes upon all conceivable subjects. It was well said by one of our chief living physicians,—himself one of the greatest, if not the greatest, of clinical teachers,—that it is appalling to think of the quantity of knowledge running to waste in our hospitals. Mr. Adams observes :

" It is of the highest practical importance that the surgeon should have clear and definite ideas of the cause of difficulty in the treatment of these serious but very common cases : there can be no doubt that many valuable lives are sacrificed through ignorance of this particular : cases of retention, from enlarged prostate, are of daily occurrence, and every surgeon of common experience has had cause to lament the serious mischief resulting from a want of attention to this subject; nay, it occasionally happens, that, on being called in consultation to cases of this description, the surgeon finds his brother practitioner ignorant of the true cause of the retention, totally unpractised in the use of the prostatic catheter, and in all probability without such an instrument in his *armamentarium* :—this ought not to be, and there is no excuse for such negligence : every surgeon on commencing practice ought to be aware that such cases *must* of necessity present themselves to his consideration, he is therefore in moral duty bound to provide himself with the necessary information on these topics, and he is equally bound, for his own sake as well as for his patient's, to have such appliances ready as he must at some period or other of his practice be called upon to use.

" And, whilst I am on this subject I cannot help making a brief digression on what I conceive to be a paramount duty of those who undertake the instruction of students at our large hospitals. I conceive that they have not done their duty to their pupils unless they have not only directed their attention to this important point, but have instructed them in the actual manipulation requisite to relieve their patients in this most perilous strait : a student, however intelligent and zealous in the acquisition of knowledge, cannot attain dexterity by *intuition* or by reading, he must be taught under the eye of his instructor how to handle the catheter, where to expect the difficulty in its introduction, and how to overcome that difficulty ; by this he gets a confidence which is essential to his success, and which in no other way can he by possibility acquire." (pp. 101, 102.)

When hæmorrhage occurs from the prostate, and there is an accumulation of clotted blood in the bladder, the author says he has formed

an excellent extemporary suction-pump, by introducing into a catheter passed into the bladder, a long piece of wire, to which a bit of lint, large enough to fill the catheter, has been attached, which is to be employed as a piston. It is more serviceable for removing clots of blood than the common lithotrity syringe.

Scrofulous disease and abscess of the prostate gland are diseases that have occurred to Mr. Adams, in common with other surgeons, and he has also met with cancer in this situation.

Prostatic concretions are so common, that, according to the author, they may be found in almost all cases, on making a microscopic examination of a thin section of the gland—and are consequent, most probably, on a deranged action of the mucous membrane, as formerly maintained by Dr. Prout. When of a small size and imbedded in the substance of the gland, they give rise to little inconvenience; but if once loosened, may of course pass backwards into the bladder, or forwards into the urethra, whence they may often be extracted by forceps.

Examples of neuralgia of the prostate have been met with by Mr. Adams, and found as difficult to cure as neuralgia in other situations.

The book concludes by a few observations on the dilatability of the prostate, and on Dr. Willis's proposal of dilating the neck of the bladder by fluid pressure—a proceeding which does not find much favour with Mr. Adams.—*Medico Chirurgical Review, Jan*, 1852.

---

## Perrie's *Principles and Practice of Surgery*.

"It is a question of great importance, in reference to the operation for strangulated hernia, which of the two following modes of proceeding in regard to the hernial sac is the more advisable; namely, that of opening the sac, and dividing the stricture from within; or that of dividing the stricture, and replacing the parts without opening the sac. Of these two, technically called the *intra-peritoneal* and *extra-peritoneal* modes of division, the former is that, which, except in a limited number of cases, has received the sanction and adoption of most surgical authorities in these islands. It appears certain that, in the great majority of cases, it is by that mode alone, that it is possible to accomplish the two grand indications which it is desirable to fulfil by the operation; namely, the removal of the pressure by division of the stricture, and the return of the hernia. The fulfilment of the former,

namely, the removal of the pressure by division of the stricture, is essential to the safety of the patient; and that of the latter, the return of the hernia, exceedingly desirable when practicable and proper.

"With regard to the *first* indication, when the stricture is external to the sac, as is not unusual, it is possible to divide it by adopting either mode; but if formed by the sac, or within it, it is clear, that by intra-peritoneal division alone can the more important indication be fulfilled, or any good effected. Cases belonging to the latter class are by no means of unfrequent occurrence. That the neck of the hernial sac occasionally constitutes the stricture, is a point regarding which surgeons are agreed, instances having been recorded by the great surgical authorities of this and other countries, and examples occurring frequently in the practice of many surgeons. The sac, necessarily narrower at its neck than in other parts, is liable to be still further diminished by effusion and organization of lymph, either on its outer or inner surface, as well as by a thickened and indurated state of its own substance,—conditions which, separately, or in various degrees of combination, diminish the canal of the sac. For eighteen years I have availed myself of every opportunity of examining the condition of hernial sacs, and from my dissections I am led to conclude, that in herniæ of considerable standing, thickening of the neck is of frequent occurrence. Although constriction, when sufficient to render a hernia irreducible, is usually at the neck of the sac, yet it is not invariably so. This fact is of little practical moment if a hernia be merely irreducible; but it becomes of the greatest importance if it be strangulated, and require an operation, as the paramount object of the operation is to divide the constriction, in order to relieve the symptoms of strangulation.

"The stricture is occasionally found within the sac. In a very few instances it has been found to be occasioned by a loop of intestine; in some by a band of omentum; and in others by a band of lymph effused from the serous coat of the intestine, and surrounding and constricting it as by a ligature.

"This last-mentioned condition has been described and delineated by Sir Astley Cooper. It has also been met with by other surgeons; and not fewer than four cases of it have come under my own observation."

"From what is stated above, it appears very clear that the extra-peritoneal mode of herniotomy is quite unsuitable when the stricture is formed by the sac or within it, whatever be the nature of the stricture

itself; and the above-mentioned examples of strictures formed by membranous bands, suggest very strongly the propriety of great caution in arriving at the determination of adopting the extra-peritoneal division; as well as, in those cases in which the sac is opened, of examining very carefully before the hernia be returned, whether membranous bands do or do not exist.

"The *second* indication which it is desirable to fulfil by an operation, is the return of the hernia.

"With a view to facilitate the inquiry, as to which of the two modes of procedure is the more suitable, cases may be arranged into the three following classes;

"First,—Those in which the stricture is external to the sac, in which it is neither impracticable nor improper to return the hernia—and in which no obstacle exists to that return after the stricture has been divided. Secondly,—Those in which an obstacle does exist after division of the stricture: and, Thirdly,—Those in which the return of the included intestine would be practicable, but improper.

"First,—In cases belonging to the first class, either mode is applicable; but extra-peritoneal division being attended with much less danger, is decidedly preferable.

"Secondly,—In regard to cases in which, independent of the stricture, an obstacle to reduction exists, it will be proper to consider what are the principal obstacles most frequently met with. These are adhesions of the protruded parts to the hernial sac, the natural means of connexion, in some rare cases; adhesions of the protruded parts to each other; and the large size of the hernia.

"For a description of these obstacles to reduction, the reader is referred to the section on irreducible hernia.

"If any of these conditions exist, and if the sac be not opened, reduction is in general impracticable. If the sac be opened, two of them may easily be overcome; namely, the soft recent adhesions formed by coagulable lymph, and the filamentous,—the former can be broken down with the finger, the latter divided by the knife. Two of them present an insuperable impediment to reduction; namely, the natural means of connexion, and the close organized adhesions, if these be to a great extent, and the hernia large. With regard to the two remaining conditions, the possibility of overcoming them, and the propriety of at-

tempting to do so, must depend entirely on the particular circumstances of the case; but frequently, it is more judicious not to interfere with them, unless they exist only to a limited extent, and in herniæ of moderate size. Most of these conditions, however, are principally met with in cases of large and old hernia; and, on account of the risk of injuring the intestine in attempts at reduction, as well as that of inducing dangerous inflammation by much handling of the intestine, and the difficulty of maintaining the parts reduced, even should reduction be possible, the majority of surgeons seem now disposed to follow the advice of Sir Astley Cooper regarding such cases. His practice was, to divide the stricture, which fortunately in such cases is, for the most part, external to the sac, and to leave the latter unopened, and the hernia unreduced. The stricture being divided, the principal cause of danger is removed. The coverings of the hernia should be replaced, and proper means taken for promoting the healing of the wound.

"Thirdly,—There are certain states in which it would be extremely improper to attempt reduction; namely, when the hernia is gangrenous, or when the intestine has given way from inflammation having gone on to gangrene, or when it has been torn, or accidentally wounded in the operation. The two last-mentioned conditions can only result from unskilfulness in the mode of procedure; but, should they exist, the hernia ought not to be returned. When the intestine presents such an appearance as to render it doubtful whether its return may be followed by fæcal extravasation, the surgeon should content himself with carefully dividing the stricture. In all cases in which the intestine is gangrenous, or not entire from whatever cause, it ought to be allowed to remain, so that the fæces passing off by the wound may form an abnormal anus, and extravasation into the abdomen be thereby prevented. When omentum forms the hernia, and it is gangrenous, the gangrenous portion may be removed, and the remaining part returned to the abdominal aspect of the mouth of the hernial sac. The practice of removing a portion of omentum, when from growth it renders a hernia irreducible after division of the stricture, is a proceeding which, in some cases, may be adopted with advantage. For cases belonging to this class, extra-peritoneal division is of course quite unsuitable. These remarks, it is to be hoped, will be sufficient to point out the proper mode of procedure when the hernia is sound, and reducible after division of the stricture; when it is irreducible after such division—and when it is in any of the various conditions in which reduction would be danger-

ous and improper; and also to show, that to follow one method indiscriminately in all cases would be unwise; that intra, or extra-peritoneal division should be adopted according to the particular circumstances of the case; that in the majority of cases intra-peritoneal division is not only the more suitable mode, but the only one which is safe, or by which any good can be effected; and that the cases in which extra-peritoneal division is suitable are those of very short standing, where there is no reason to apprehend the existence of adhesions, or of an unsound condition of the hernia; and those also of large and old hernia, where the more judicious proceeding is to divide the stricture, and not to attempt reduction."

"There can be no doubt that intestinal inflammation is the most frequent cause of death after the operation for strangulated hernia. Some of the advocates of Petit's method have assigned as the causes of that inflammation, when the ordinary proceeding is adopted, the exposure of the intestine to light and air, change of temperature and handling. I agree with Mr. Lawrence in ascribing it, not to these agents, but chiefly to the long-continued pressure of the stricture, owing to the operation being *too long delayed*, and to an injudicious and *too frequent use of the taxis* previous to the operation. I remember being very much struck with an observation of Desault's; I have not his works beside me at present, but it is to this effect:—'Think well of that hernia which has been little handled and soon operated on.' The operation is justifiable and necessary, when the patient has been brought fully under the influence of chloroform, and the taxis has been fairly, fully, and skilfully tried without producing the desired effect. The conviction being thus produced, that by no other means than an operation is there hope of saving the life of the patient, it ought to be resorted to as quickly as possible. Much handling must not only give unnecessary pain, but also increase the risk of hurrying on the inflammation to results which, even though the operation should be performed, would render it unsafe to return the hernia. When therefore the taxis has been fairly and skilfully tried, on a patient fully under the influence of chloroform, no advantage can, but considerable injury may, result from the repetition of treatment already found to be unavailing. Many considerations show that the operation should be performed as soon as possible, after its inevitable necessity has been found to exist. Delay, like undue handling, increases the risk of inducing such a state of the her-

nia, in consequence of inflammation, as would render its return unsafe. From the circumstance that a hernia may speedily prove fatal, and from the depressed state which comes on in consequence of delay, rendering the patient less able to stand the shock of an operation, will be seen the importance of being as prompt as possible; but there is another and a very urgent reason—namely, that if the operation be delayed until intestinal inflammation has been induced within the abdomen, it is far from certain that this inflammation will subside on the removal of the hernia which caused it. I have performed the operation for strangulated hernia, according to the usual mode, a considerable number of times, I believe twenty-three in all, and (except in one case, where death occurred in consequence of an attack of phlegmonous erysipelas which commenced after the patient was considered out of all danger) in every instance with success. This success I attribute two things—namely, avoiding all undue and useless handling, and performing the operation early. My decided impression is, that the reason why the operation is so frequently followed by death, instead of being one of the most successful of the great operations of surgery, is, too great delay in resorting to an operation, and the undue and injurious use of the taxis, even after its adoption has proved unavailing."

## MATERIA MEDICA AND THERAPEUTICS.

### *Turpentine Embrocation in Ague.*

The following embrocation is recommended by M. Debout as being highly efficacious as a substitute for quinine, and especially for the poorer classes:—Essential oil of turpentine, 100; chloroform, 10; or laudanum, 4. It is to be rubbed along the spine twice a day, during the apyrexia, taking care that one of the frictions should take place an hour or two prior to the expected paroxysm.—*Bull. de Therap.*, tom. xlii. p. 154.

### *On Matico in Diarrhœa.* By M. Modonini.

M. Modonini states that he has employed this substance in about 120 cases, and usually with good and speedy effect, in various species

of intestinal discharges, and especially in atonic diarrhœa. It is given at the Bologna Hospital in doses of from 18 grs. to ʒj. per diem, no inconvenience save a little nausea of diarrhœa ever being caused, and this being capable of removal, either by diminishing the dose, or temporarily suspending the remedy. In the most favourable cases, an impression is made upon the disease by three or four doses; and it is quite relieved in from three to six days. The medicine should, however, be continued awhile longer, in order to prevent relapse. In those diarrhœas in which, owing to the existence of visceral changes, or the presence of a general dyscrasis, the return of the diarrhœa is inevitable, the matico is still an invaluable remedy, owing to the rapidity of its astringent action, which enables us to suspend the exhsusting discharges, and obtain time for the employment of any other means which the nature of the case may indicate.—*Bulletino delle Scienze Med.*, vol. xx. p. 63.

---

*On the Mode of Administration of Iodine.* By M. Devergie.

M. Devergie administers this substance as an "antilymphatic," in the following manner:—Porphyrized unoxidized iron-filings, 40 centigrammes; iodine, 1 gramme, 65 to 80 Centig.; water, 8 grammes; simple syrup, 500 grammes. The iron and iodine are triturated in a mortar, the water being added drop by drop, and then incorporated with the syrup. When it is desired to add the iodide of potassium, 6 or 8 grammes are previously dissolved in the smallest possible quantity of water, and incorporated with the iron and iodine before the syrup is added. A tablespoonful of this syrup is given in a bitter tisane (that of hops, prepared according to the Paris Codex, being the best), night and morning.—*Gaz. des Hopitaux*, No. 22.

---

*On the Rapid Cure of Itch.* By MM. Hardy and Devergie.

M. Hardy states, that by the modification which he has introduced into the mode of treating the itch at St. Louis, he is now enabled to

definitively cure a patient in *two hours*, so that it is in contemplation to treat all patients suffering under this disease as out-patients. The entire body is first thoroughly rubbed for half an hour with soft soap, which has the effect of breaking up some of the furrows in which the acari are lodged. A tepid bath is next employed for one hour, in order to soften the epidermis, the patient continuing to wash himself well while in it. Finally, the patients rub each other thoroughly for half an hour over the entire surface with the sulphur ointment (lard 8 parts, sulphur 2, subc. potass 1), and the itch is cured. The various secondary eruptions, formerly confounded with the itch, may require several days for their dispersion, by means of simple baths. In 4 only out of 400 cases so treated, have relapses occurred, and 144 cases out of 145 occurring in June were so cured.

In this way the disease spreads by contagion much less than heretofore, when the patients had to wait until they could obtain admission into the hospital.—In a recent paper, however, M. Devergie expresses an opinion that this rapid cure of a disease which has often been long persistent, is a practice not to be followed, as being dangerous to present or future health. In certain forms of itch the secretion is abundant, and when the disease has been mistaken, this may increase, so as to form a kind of purulent emunctory not to be at once destroyed with impunity. It is probable, that some of the internal abscesses, which have been observed in cases of this disease, have arisen from its repercussion; and certainly in no other form of pustular eruption would the practitioner thus act. The itching or pruritus which is produced is not entirely an indifferent matter, and the habit of nocturnal scratching must not be suddenly suppressed. Even when pedicular disease or prurigo is suddenly arrested, dangerous pulmonary congestion sometimes occurs, requiring active rubefacients, although here little or no secretion has been suppressed. A single gentle friction suffices to destroy the contagious property, and it is best to complete the cure by repeating such for five or six days, than to run the risk, by too violent friction with very strong ointments, of producing the too sudden repression, or of exciting various forms of eczematous or lichenoid eruptions, which are sometimes more difficult to cure than the original disease, especially among the working-classes, who are so apt to neglect the condition of their skin. —*Union Med.* 1851, No. 95; *Bulletin de Therapeutique*, tom. xli, p. 385.

*On the Medicinal Uses of Urate of Ammonia.* By Dr. Bauer.

Five years' observation has convinced Dr. Bauer that this is a most valuable medicine in chronic cutaneous diseases and in tubercular diseases of the lung. An ointment, containing one scruple to the ounce, is applied by a pencil to the eruption night and morning, the cure being effected in from one to three weeks. In tubercular disease the ointment is rubbed-in alternately night and morning on the back and front of the chest. No inflammatory complication should be present during its employment.

In reference to this substance it is interesting to observe, that in Colombia, South America, where lepra prevails so extensively, the benefit derived from the external and internal use of *guano* has been placed beyond all doubt; and Dr. Lallemand has found it of great utility in the treatment of morphæa in the Brazils. The urate of ammonia, which is found in this substance in great abundance, is probably the chief medicinal agent.—*Buchner's Report*, No. 19. p. 86.

---

## MISCELLANIES.

### I.—DIRECTIONS FOR COLLECTING BOTANICAL SPECIMENS, AND PRESERVING THEM FOR THE HERBARIUM.

*Compiled for the use of the Botanical Class—Medical College. Many of the valuable suggestions are contained in a paper by my friend* A. K. Greville.

Plants are preserved by placing them between layers of absorbent paper, and then submitting them to pressure until they are quite dry. To *dry* plants is a simple operation; and there are collectors who think that, if all moisture is expelled, nothing more can reasonably be expected. This, however, is not sufficient for the purposes of science. The botanist must aim not only at retaining as much as possible the

*character*, but the original beauty, of the plants he wishes to preserve. The black, curtailed, and carelessly arranged *vegetable remains* which are often dignified with the names of botanical specimens, are utterly, worthless, and are rejected by every one anxious to form a valuable collection. In order to improve our taste in this respect, the following rules have been drawn up ; and botanists, by following them, will preserve their specimens not only beautifully, but with facility and rapidity.

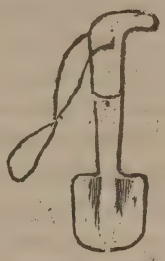
## I. *Selection of Specimens.*

Specimens should be taken (when practicable) in fine weather, and free from external moisture. They should be in a perfect state of growth, the leaves and other parts uninjured. When, the lower stem-leaves differ in shape from the upper ones, and the plant is too large to preserve entire, portions of the lower parts of the stem with the leaves, should be taken separately : if the root-leaves also differ, they, too, should be preserved. In short, it should always be borne in mind, that a *perfect specimen* of any plant includes every characteristic part. *Bad* specimens are always to be rejected, unless the plant is of great rarity. It should, indeed, be a rule of the botanical collector, that no specimen is to be admitted under the idea that it will *do for a duplicate*, if it would not *do for his own herbarium ;* and I can scarcely imagine a botanist content to manufacture and store up in his own collection, such *vegetable remains* as have been already alluded to. Varieties are always interesting, as well as monstrosities, or deviations from the ordinary arrangement of any of the parts. In regard to the *size* of specimens, the best guide is the paper most generallly used in good herbaria : this is about 17 by 10½ inches. No specimens should therefore exceed 16 inches in length by 9½ inches in breadth. Plants under this size should invariably have the root attached. It may be laid down as a general rule, that the entire plant should be taken, if, by a little management, it can be brought within the above-mentioned limits. Grasses, Carices, and plants of a slender habit, may be folded once or twice backwards and forwards, if necessary ; and long graceful Ferns, &c., may in this manner be preserved without mutilation. When it is inconvenient to obtain the root, the stem should be separated below the insereion of the root-leaves. The young collector is reminded,

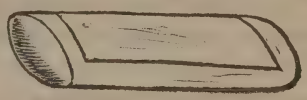
that specimens in fruit are *always* to be selected as well as those in flower.

II. *Apparatus requisite for Collecting and Preserving Plants.*

1. The *Digger*. This is a sort of trowel, which will be better understood by the annexed cut than by description. The whole instrument is 7 or 8 inches long; the spud $2\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches wide at the top, narrowing gradually to 2 inches at the bottom, the lower angles slightly rounded. It should be made sufficiently strong, to resist considerable force in digging out plants from the crevices of rocks, &c. This can be put into a leather sheath and fastened by a strap round the waste, the spade itself being attached to the strap by a long string.

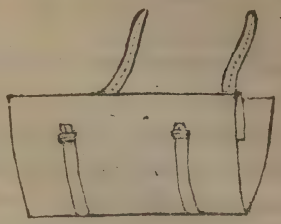


2. The *Vasculum* or *Botanical Box*. The diligent collector will find it convenient to have his boxes of two or three sizes. One of them should be small enough for the pocket, and is very useful for the reception of small and delicate plants, and such objects as demand peculiar care. The principal vasculum, for distinction's sake, we call the *Magnum*. It should not be less than 20 inches long, 8 or 9 inches wide, and 5 inches deep, having a strong handle at one end; and when made of those two it is by no means heavy. The form most recommended is that exhibited in the annexed figure; in which it will be perceived, that the upper surface, with the lid, is convex, the curve being similar to that of the under surface.



The *Magnum* is, of course, only required on excursions when a considerable number of specimens are desired. On such occasions, it is indispensable, if the collector wishes to bring home his plants in a satisfactory state. In boxes intended for the pocket, and in them only, the common concave form of the lid may be retained with advantage.

3. The *Field-Book*. This may be carried or not, according to circumstances. It may be made of any size, from that of a large pocket-book to a folio, and is in fact nothing more than a portfolio, containing a quantity of absorbent paper, temporary pressure being given by a couple of straps. It may be laid on the ground and covered with sand, which under a tropical sun, rapidly completes the process of desiccation. To the inner edge of one side is attached a piece of oiled silk, as well as to each end, which serves to keep the paper dry in case of rain. If the field-book is of a quarto or folio size, it may be slung over the shoulder by a strap, on the side unoccupied by the vasculum. The great use of such a book is, that plants having very deciduous flowers, or stipules, may be at once exposed to some degree of pressure. Some plants also, whose corollas close almost immediately after being gathered, such as some species of *Gentianaceæ* and *Convolvulaceæ*. Acacia Stipulater for example, can only be preserved in their beauty by being placed in paper on the spot. In a long day's excursion, where the harvest is likely to be abundant, the field-book will be found extremely useful.



4. *Paper*. The best paper for the process of drying plants is a kind known by the name of *Demy grey*, with a tolerably smooth surface, 18 inches long by 11 inches broad, which is the size found by experience to be most convenient, not only for the resident but the travelling botanist. It may be purchased for seven or eight shillings per ream, and is preferable to common blotting paper, in being very much cheaper, *far more durable*, and in drying more rapidly after having been used,—a point of considerable importance, especially on botanical excursions, when large quantities have to be dried daily, and sometimes under very disadvantageous circumstances. This is the kind of paper which has been used for many years by Dr. Balfour and his students, in their excursions among the Highlands of Scotland; and as it is highly desirable to reduce the labour of collecting and preserving to the *minimum*, every experiment has been tried, both as regards the quality and size of paper, and all the details of the process of desiccation, the sum of which affects in no small degree the *comfort* and *success* of such expedi-

tious. Alpine excursions often are really the pursuit of plants under difficulties. A limited quantity of *very thin* white paper, of the same size as that described above, will be found useful in preserving some plants, which become soft and flaccid during the process of drying, and which cannot be transferred from one sheet of paper to another without injury. The corolla of *Viola* Wightiana, for example, collapses, if removed in the ordinary way, after a day's pressure. By placing such plants at first *within* the sheet of thin paper, the whole sheet, plants and all, can be moved when the drying paper requires to be changed, without their being disturbed.

5. *Boards.* Two kinds of boards must be procured, both of which should be exactly the size of the paper, or, at most, a quarter of an inch larger each way. Two of the boards should be double ones, half or three-quarters of an inch thick; each double board being composed of two thin ones, the grain of the one crossing that of the other, firmly glued together, and further secured by small screws along the edge, at intervals of three inches this secures against splitting when strapped or corded: the rest of the boards, say eight in number, should be three-eighths of an inch thick. These ten boards form a *set*, and will serve for a couple of reams of paper. If the collector is active, he will require several sets of boards, and paper in proportion. In order to shew what *may* be done, and *well* done, by judicious arrangement, it may be mentioned, that, in an excursion made in the autumn of 1837, by Dr. Balfour, and two friends they took with them about twenty reams of paper, the whole of which was brought into use before the time allotted to the excursion (three weeks) had expired; and during this period, about 15,000 specimens rewarded their exertions. A few sheets of stout pasteboard will be found very convenient for separating the specimens and for packing them as they become dry; particularly in preventing woody plants, &c., from injuring those placed above and below them.

6, *Press.* Some botanists employ screw or other presses. A preferable and simpler plan is to use common iron weights, or a squared stone having an iron ring fixed in the centre. By this means, the pressure is never relaxed, as is the case with the screw-press. In preserving *bulky* plants, it is sometimes difficult to equalize the pressure. Paper folded to the required thickness, and placed on each side of the stem, is frequently sufficient for the purpose. In more difficult cases,

a sand-bag or two, of the size of the paper, may be used with advantage. In travelling, each parcel of paper containing plants must be secured by three strong straps, a double board being placed above and below, and in this way a considerable degree of pressure may be obtained. When the botanist is stationary for several days on an excursion, or even resting for a single night no better resource can be desired than a few heavy stones. A weight of 100 lb. will not be too much to place upon each parcel. More than this will seldom be required, and may be injurious.

A pair of common surgeon's forceps are very useful in removing small plants from one sheet of paper to another. A second pair, as well as an extra knife, will be provided by the experienced traveller, in case of accidents. If an excursion of some days is contemplated, a good supply of strong cord, and several spare straps, should not be omitted; and every parcel of paper should be completely enveloped in oil-cloth (before the boards are strapped on), to prevent the paper or its contents from being injured by wet. When the packages are well secured and balanced they may be slung upon bullocks—as practised by Dr. Wight and Mr. Griffiths.

The botanist being now provided with his *materials*, I shall suppose him to have commenced a ramble of a few days. He has already been tempted to deposit some fine specimens of common plants in his vasculum; but let not this provoke a smile, for it is not a bad rule to take even a very common plant, when a *remarkably* fine or beautiful specimen presents itself. But as our botanist has commenced operations, I shall now address myself to him, and offer a few hints for his guidance. Be very particular in the first place, in the choice of specimens: put nothing into your box that is not good of its kind. Let the specimens be the proper size of preserving, and dispose them carefully so as not to injure each other. Clean the roots before you place them in the box, and wash those which have been gathered in muddy places. If you have been very successful, and your box begins to shew symptoms of repletion, sit down and revise its contents; throw away the inferior things, and retain nothing but what is really worth preserving. You will thus bring home your collection in a good state, although you may have, perchance, to journey a dozen miles to your quarters. If the sun is very powerful, cover your specimens with a few large leaves,

or a little grass, and sprinkle a few drops of water over them. Nothing is more injurious to the beauty of plants, than the cramming system of voracious and indiscriminate collectors. I have seen a heavy vasculum brought under a burning sun from a distant mountain, and after every tolerable specimen was removed, contain a mass of *rejectamenta* that would have reflected discredit on a whole party. Having returned with your treasures, you will be anxious to commit them to paper, and I hasten to give you the necessary directions. Provide yourself with a number of slips of paper, 2 inches long by 1 inch broad, with a slit half an inch in length cut in the centre, and have your knife and forceps at hand. Place now 4 or half a dozen sheets of paper upon one of the double boards, and proceed to lay out your specimens; one or more on the same sheets, according to their size. Be particular to preserve the natural features of the plant as much as possible. This point is frequently overlooked, and thereby the specimens when dried are not so valuable. It is not desirable that the branches, leaves, &c., should be *artificially* displayed: separate them slightly, if they require it, and take care that the parts are not unnaturally bent or folded. Long slender plants, however, that require to be folded, must have the folded extremity passed through the slit of one of the paper slips, which will keep the parts in their proper position. Lay down your specimens with their roots towards you, and as you place five or six sheets of paper upon them, arrange the leaves, &c., with your hand or the forceps, and then proceed with other specimens, until you have a dozen or more sheets of them arranged. Cover them, then, with one of the thin boards, and begin another series; stratum after stratum of plants are put down till a parcel of convenient size is piled up, and an occasional board may be put in the body of the pile when being built to preserve uniformity, and so until all your plants are secured. Place the other double board upon the top, and submit the whole to pressure. The above directions are sufficient for the preservation of most plants: some, however, demand particular treatment. If the specimens are woody, or very thick in the stem, a slice can often be taken from the back without affecting the character of the plant: a portion of the plant may be removed if it is densely tufted; and some of the branches of the back in such plants as Dicrostachys cinerea, Acacia latromum, &c. &c. Robust plants that yield but slightly to pressure, for example, and others which do not yield *at first* to pressure, require a thin board to be

placed between every sheet of specimens. The stone-crop tribe (crassuluceæ) must be plunged for 20 or 30 seconds into boiling-hot water, and then pressed between coarse napkins until the external moisture be removed, before they are committed to paper: unless this be done, the plants will live for a month under pressure, and the leaves die and fall off by degrees. Aquatic plants should also be freed from external moisture by means of napkins, and the same plan may be advantageously resorted to when specimens are collected in wet weather, which is sometimes inevitable. Orchideous plants must be subjected to great pressure, and ought to be dried very rapidly after dipping in hot water; scarify the back of the stem and the midrib on the back of each leaf with a knife, in order that the juice of the plant may have an outlet by which to escape: separate the flowers also, by inserting small pieces of paper between them. When plants have large and delicate corollas, place a piece of thin paper, somewhat larger than the corolla, above and below it, to remain until the specimens are dry. The quantity of paper to be placed between each sheet of specimens will vary according to circumstances. For plants of a thin texture, and containing little moisture, five or six sheets are sufficient; but more is necessary for succulent kinds, for aquatic plants, and for plants in general, when gathered in wet weather; likewise for woody and robust specimens.

In regard to the frequency with which the paper ought to be changed, this, for ordinary plants, is a *daily* operation, and ought on no account to be omitted, until they are very nearly dry. While many plants are easily preserved by these means, others cannot be so readily managed, and some are so constant in their tendency to turn black in drying that this feature has been deemed charasteristic of them. The use of hot water aquatic and very succulent plants should be transferred to dry paper twice a-day; and the species of *Sedum*, &c., which have been plunged into hot water, several times during the first and second days, as the moisture is given out very rapidly. Change the paper in which orchideous plants are drying twice a-day, and let it also be well heated. If you are stationary, and have plenty of paper, slender plants, like many of the Grasses, &c., and others containing very little moisture, like the *Heliatrope* &c., may be allowed to remain in the paper after having received a single change, until they are dry, two or three extra sheets being placed between the spe-

cimens. In giving your specimens their first change of paper, you will not omit to rectify any mistake in their disposition, and place those leaves right that have been accidentally folded, &c.

On the second day of your excursion, you will have a quantity of damp paper on your hands. In some places it is easy enough to get it dried, but in mountainous districts, the difficulty of getting several reams of damp paper dried *daily*, at first sight appears insurmountable. Nothing, however, is more readily effected, provided you wait upon yourself. Having brought a roll of thick cord (and a score of strong nails in case they should be wanted), fix one end of the cord to the rafter of the *Bungalow*, and carry it backwards and forwards along the roof as many turns as you require. Hang your paper on these ropes in parcels of a few sheets before you leave your quarters in the morning, and by the time you want them in the evening they will be thoroughly dry. Another set may be dried during the night.

As the plants become dry, they may be arranged close together, but so as not to touch each other, on single sheets of perfectly dry paper, and kept in parcels by themselves. When a considerable number of plants are in process of drying, those in the different stages of the process should be kept apart from each other, in order that the dessication of the more advanced specimens may not be retarded by the juxtaposition of those more recently collected.

Invariably attach labels to your specimens, mentioning the particular station, the date of collection, elevation above the sea (as nearly as it can be estimated), the geological formation of the locality, and any additional information that may be interesting. It is of the first importance to obtain accurate data regarding such plants as may seem worthy of cultivation, and this can only be done by a careful examination in their living state, and in their native localities.

I have one other point to notice, and if your excursion is to last a week or more, it is of great importance, and equally applicable whether you are alone or form one of a party. It is very easy to visit a number of localities, and to collect a vast number of plants; but if you wish to exhibit the fruits of your labour, and not to be ashamed of them, you must from time to time suspend the labour of collecting. Unless there be some fixed rule of this kind, you will find little comfort or satisfaction in your exertions. The old and standard Herbaria of Indian plants, so often consulted in England, are rendered comparatively use-

less to the student of Botanical Geography by the want of exact references to the native country; such vague habitats as "*India Orientalis*" or "*Montes Hindostaniae*," often comprising the whole information obtainable regarding the specific distribution of the plants in question. You will soon find, if you are a diligent collector, that your labour increases for some days in a sort of geometrical ratio. Half a day, therefore, *at least*, in the middle of the week, say the morning of every Wednesday till two o'clock, should be appropriated to the preservation and arrangement of your plants; and a part, or the whole of every Saturday should *invariably* be set apart for the same purpose, in order that they may not be injured by remaining untouched on the Lord's Day.

Many Cryptogamous plants do not necessarily require the same care when first collected as those about which I have been speaking, as they can be relaxed by moisture and prepared at any subsequent period. They will, perhaps, lose somewhat of their original bright colour; but this is of trifling importance, if the great saving of time to the collector, be considered.

*Mosses* and *Hepaticæ* may be gathered in tufts, or masses of considerable size, always selecting such as are in fructification. If the stems or roots are loaded with mud or soil, they should be well washed. The tufts are then to be placed between sheets of coarse paper, and dried under a moderate pressure, after which they may be packed like other plants. In subsequently preparing specimens for the herbarium, a greater pressure will be required.

*Lichens* may be treated like mosses, at least such kinds as admit of pressure. Those species which form a close crust on rocks, trunks of trees, &c., and which can only be obtained along with a portion of the substance on which they grow, should be wrapped separately in paper, like minerals, and packed into a box.

*Algæ* or *Sea-weeds* are preserved in a rough state with much facility, and, on account of the increasing interest which attaches to them; should be assiduously collected in foreign countries, especially in the southern hemisphere. They should be taken, if possible, with the root, and will often be found in the highest state of perfection thrown on shore by the tide: the pools at low water often filled with excellent specimens. All kinds should be taken, from the smallest, to the largest manageable size; avoiding those specimens which are battered, or in a state of decomposition. Spread them on the ground, or in an outhouse, to dry,

without washing them in fresh water, in fact just as they are gathered; and when they are quite dry, pack them without pressure into a box, mixing a few small branches with them, to prevent them from being pressed too much together, in case of damp on the voyage. It may be added, that the larger olivaceous species should be put into boiling-hot water until the mucus be all given out, and then wiped with coarse napkins before they are committed to paper. The more delicate species must be washed with fresh water, floated out on pieces of paper, and afterwards dried by moderate pressure.

---

## II.—OBSERVATIONS ON THE PRESERVATION OF FRUITS AND OTHER BOTANICAL SPECIMENS IN THE MOIST STATE,

By Robert Christison, M.D., F.R.S.E., Pres. R.C.P.E., Professor of Materia Medica in the University of Edinburgh.

*Read to the Botanical Society, 12th April* 1838.

Professor Christison remarked, that, after numerous experiments made for a series of years with various fluids, he had found none which served so well to preserve both the consistence and colour of fruits, leaves, and flowers, as a concentrated solution of common salt. The solution should be made with the aid of a boiling heat, otherwise it can with difficulty be obtained sufficiently concentrated. When articles are to be sent to a distance, as when specimens are transmitted from hot climates to this country, the best mode of putting them up is to preserve those which are of small size in green glass bottles, such as are used for pickles, to fill the bottles with the solution, and to secure the corks, previously well dried, with a thick covering of some resinous substances, and cloth tied over all. But the cheapest and most effectual mode for larger articles, and indeed for botanical specimens generally, is to sew up each in cloth of any kind, with a wooden label attached to it, and numbered by branding, and to put the whole in a barrel, containing the solution of salt, and of such size that the specimens are loosely packed, and yet cannot easily change their position. He has frequently received specimens sent in this way, in a state of complete preservation, from Ceylon, the Isle of France, and the West Indies, although four or six months elapsed before they reached their destination.

Specimens which are to be preserved for demonstration should be immersed for a month or upwards in the saline solution before they are finally put up. The solution should then be changed, partly because it is usually somewhat coloured, but partly also because it is rendered too diluted in consequence of the juices of the vegetable passing out by *exosmosis*. The last solution should be filtered. It is often found difficult to confine the salt in the preparation-jar. The most effectual method, where the mouth of the jar does not exceed two inches or two inches and a half in diameter, is to leave a space of half an inch or more at the top without fluid, to clean and dry the lip of the jar thoroughly, to drop melted sealing wax on the upper surface of the lip, so as to form a uniform ring over it, to place over the mouth a watch-glass of such size as to cover the whole lip, or even overhang it a little, to press this gently down with one finger, and to fuse the wax between the lip of the jar and the watch-glass, by moving a large spirit-lamp flame around the edge. After the whole ring of wax is thoroughly melted, the pressure must be kept up till the glass cools and the wax concretes. The glass never cracks in this operation, if carefully performed; but occasionally the watch-glass cracks on cooling. Sometimes the watch-glass becomes displaced after a time; but this inconvenience is of little moment, as an adroit person may easily restore it in two minutes. Where the mouth of the jar is larger, the most effectual plan, and at the same time the easiest, is to tie one layer of sheet caoutchouc over it in the usual way for anatomical preparations. The caoutchouc should be stretched over the jar, but not strongly, by one, or still better by two persons, while another secures round the neck two or three folds of stout twine as a temporary ligature. A thinner twine is then drawn steadily and tightly round three or four times above the former, care being taken not to cut the caoutchouc.

Numerous specimens were exhibited which had been preserved in these ways for one, two, three, and five years, among which were sprigs with leaves, and ripe and unripe fruit, of *Myristica moschata*, *Xanthochymus pictorius*, *Garcinia Gambogia*, *Garcinia Mangostana*, *Hebradendron gambogioides*, *Alpinia Cardamomum*, *Mangifera indica*, *Tabernæmontana dichotoma*, *Ricinus communis*, *Theobroma Cacao*, *Tamarindus indica*, *Calophyllum Inophyllum*, *Flacourtia inermis*, *Strychnos Nux-vomica*.

In the greater part of these the green tint of the leaves, and the peculiar colour of the fruit, seemed to have undergone little alteration.

Solution of salt is comparatively inapplicable, however, where the fruit is very pulpy,—in such fruits, for example, as *Solanum lycopersicum*, or lemons and oranges; because the fruit shrivels by exosmosis of its fluids. Diluted pyroligneous acetic acid, diluted to the density of 1008, sometimes answers well in such circumstances; but after a few years the texture of the specimens becomes so pulpy and brittle, as not to admit of their being handled, and most colours are in no long time more or less altered. Spirit, which is most generally used, speedily renders all colours alike brown; but is probably better for delicate specimens which may be subjected to minute dissection.

# PART FIRST.

## ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Annual Medical Report of a Detachment 35th Regiment N. I. for the year* 1850-51, *stationed at Sedasheghur.* By Assistant Apothecary B. H. BOND.

1.—*Topographical description of the station and its vicinity; nature of the climate; atmospheric phenomena; &c.*

For the particulars on the above heads vide Medical Report for 1847 and 1848. The Medical year commencing 1st April 1850, and terminating 31st March 1851, has been productive of no remarkable changes in an atmospherical point of view, the seasons and their attendant phenomena have been somewhat similar to those mentioned in detail in my report for 1849. The monsoon though late in setting in has contributed more than its usual quantity of the element, for the purposes of irrigation, and the harvest has yielded a reasonable return to the labouring classes.

The period embraced in this report, has been remarkable for its healthiness; as on a reference to the return, it will be seen that very little sickness attacked the men of the detachment, the total number treated being 73; discharged 69, died none, and remaining 4—the average number of sick being $2\frac{1}{2}$ from a strength of $78\frac{1}{2}$. Most of the diseases that have come under observation were generally of a mild nature, those particularly deserving of notice are introduced in their respective places.

The inhabitants have as usual suffered more or less from endemic diseases; the casualties during this year, being fewer in

number, in comparison with other periods, they seem also to have enjoyed a perfect exemption from epidemic visitations, particularly from that baneful scourge, the cholera, which has not made its appearance at this place for a number of years, (a circumstance uncommon to other parts,) and may perhaps be attributable to the geological structure and position of the station, or more probably to its not being an extensive maritime port !

*2nd.—Position of the barracks and hospital with the extent and nature of the accommodation and means of ventilation, &c.*

The barracks and hospital have undergone no alterations, the usual annual repairs have been executed, such as whitewashing, renewing the tiles, &c. For other particulars as respects their construction and dimensions, vide Medical Report for 1847. The suggested improvements on the limited space of the verandah of the hospital, adverted to in last year's report, are again respectfully brought to the notice and consideration of the Board.

*3rd.—Duty and employment, specifying if these are in any respect severe, as to be likely to prove prejudicial to the health of the troops.*

The extent of duties are very limited, 15 privates and two non-commissioned officers being on duty daily, the military exercises are regularly kept up, and the system of discipline such, as to render it highly beneficial to the health of the men.

*4th.—The average strength of the detachment throughout the year distinguishing Europeans from Natives, and shewing any change that have taken place.*

The average strength throughout the year has been one European officer, and 78 men, including Native commissioned, non-commissioned officers and privates, the relief of the detachment being the only change that has transpired during the period.

*5th.—Remarks on the principal classes of diseases by which sickness and mortality have been occasioned, &c.*

The diseases most prevalent during the period embraced in this report, were 19 cases of intermittent and one of remittent fever, 3 cases of hepatitis acuta, 1 of peritonitis, 3 cases of dysenteria acuta, 1 of anasarca, and 5 cases of rheumatism acute and chronic. Although there are not sufficient data to form an extensive report, owing to the materials being restricted to so small a number in the field of medical investigation, a few remarks as to the treatment adopted in these diseases and their results, may not prove out of place.

*Intermittent Fever.*—All these cases occurred in strong and healthy men, whose physical energies had not undergone any diminution from previous attacks of sickness, six cases were of so mild a nature, that after the usual evacuating remedies, and due restoration of the secretions, the paroxysms were cut short by small doses of bark, 7 cases under similar remedies, appeared to require stronger tonics, and yielded under the administration of quinine to the extent of 6 and 8 grains, the remaining five cases of a still more obstinate character, required the quinine to be increased to 10 and 15 grains, given in a perfect state of apyrexia, and repeated in two hours after the first dose, in none of the latter cases, in which such a large quantity of quinine was administered, was there any cerebral uneasiness complained of, the patients on the contrary appeared to derive additional vigour, their convalescence and health being rapidly established, and in five or six days from the first cessation of the paroxysm, they were discharged to their duty, and it is satisfactory to record, that not a single case of relapse has occurred. The two cases remaining on the return, were similarly treated and are now in a convalescent state.

*Hepatitis Acuta.*—Three cases under this head are marked on the return, one was of that acute form, which required bloodletting to 20 ounces, leeches and a blister to the side, the other remedies were, calomel and tartar emetic, till ptyalism was induced, saline purgatives, and latterly under the use of tonics and mineral acids, he was discharged cured. The other case was of

less severity, the inflammation, being confined to the peritoneal covering of the liver, was soon subdued by local depletion, fomentations, mild mercurials and purgatives, but a month after being discharged, he was re-admitted with symptoms, indicating functional derangement of the liver, he had dull pain and an uneasy sensation in the right hypochondrium, pain somewhat increased on pressure at the epigastrium, no febrile excitements, pulse small, and at times regular, a foul tongue, and depraved appetite. Blue pill in combination with the extract of colocynth, mild aperients, and tonics were directed; and friction with iodine ointment to the side every alternate day, under those remedies, he was again discharged to his duty, and he proceeded in February to Mangalore, with the relieved detachment.

*Dysenteria Acuta.*—Three cases of this disease came under observation, one case in its incipient stage yielded under mild remedies, the other two cases in a further advanced stage, were treated with the application of leeches along the course of the colon, fomentations, calomel and opium at the onset, followed by small doses of castor oil, the pulv. ipecac. comp. with the extract of hyoscyamus was found to allay the irritability of the intestines; and when much tormina and tenesmus prevailed, relief was obtained by the administration of emollient or opiate enemata, as soon as the dejections gradually assumed a healthy appearance, gentle laxatives, tonics, and a light nourishing diet completed the cure.

*Anasarca.*—This case was admitted into hospital with the usual characteristic symptoms, the patient had a bloated appearance, with swelling of abdomen, and lower extremities which pitted on pressure, diminished secretions, urine scanty, a foul tongue, and more or less derangement of the stomach. The remedies made use of were purgatives, calomel and opium in small doses to stimulate the absorbents, diuretics composed of tincturæ digitalis mxx. spirit. œther nit. ʒss, mist. camphora ℥iss twice a day, latterly tonics, and mineral acids, stimulating liniments, and the application of rollers to the lower extremi-

ties, under these remedies the secretions were restored, the swelling considerably diminished, and his general appearance much improved, but his constitution being greatly weakened, a change of air was considered necessary and he was accordingly sent to Mangalore in the month of January 1851.

*Rheumatism Acute and Chronic.*—These cases were generally of a mild nature and yielded under the usual remedies, the two patients remaining on the return were subject to the complaint while at Mangalore, and in one, the disease seems to have resulted from protracted gonorrhæa, both the cases are progressing favorably.

*6th.—A detail narrative of any epidemic which may have prevailed in the course of the year, stating the circumstances under which it appeared &c.*

No diseases of an epidemic character attacked the military details or inhabitants of this station during the year.

*7th.—If sufficiently extensive materials be possessed to shew whether the sickness and mortality have most affected young soldiers or those advanced in life.*

The particulars on this head are fully mentioned in the "Tabular Return" in which the diseases affecting Hindoos and Mahomedans, according to age, and period of service are specified.

*8th.—Vaccination if kept up in the detachment or station.*

Vaccination is regularly kept up, the station vaccinator as usual is zealous and attentive in his (itinerating) duties. In the detachment 18 children have been successfully vaccinated by me.

*9th.—Remarks on such cases as have been particularly worthy of observation, or have proved fatal during the year, with the symptoms, diagnosis, &c. mode of treatment pursued and post mortem examinations when made.*

*Remittent Fever.*—This case occurred in a private of a weakly constitution, three days after the first indications of the disease, the symptoms assumed all those aggravated traits, which

indicate more or less derangement in the cerebral system, and diminution of nervous energy, the following formed the most prominent symptoms, a harsh dry skin, thirst, parched and encrusted tongue, slow breathing interrupted by deep sighing, low muttering delirium, restlessness, low fever, the paroxysms recuring at intervals of 8 and 10 hours, pulse small accelerated, high coloured urine and diminished secretions, the remedies made use of, were, leeches to the temples, cold lotion to the head, mild saline purgatives in combination with diuretics and diaphoretics, calomel and antimony in small doses, cerebral excitement allayed by means of counter-irritants to the nape, and sleep procured by the administration of the acetate of morphia in ½ grain doses, these remedies aided by bark and quinine, with small quantities of wine, during the intervals of the paroxysms, gradually restored the sensorial and other functions, and under the continuance of mild tonics, mineral acids and, a light nourishing diet, his health was perfectly established.

*Peritonitis.*—This case occurred in a Musselman private aged 40, he was admitted into hospital with slight pain around the umbilicus which gradually diffused itself over the whole surface of the abdomen, and became so acute as not to admit of the slightest pressure, the pulse slow and contracted on admission became quick, hard and compressible, skin warmer than natural, tongue red and parched, bowels confined for two days, urine scanty of brick-red colour, thirst urgent, stomach irritable, and the effort to vomit aggravated the pain, and rendered respiration difficult. Treatment, he was bled twice to the extent of 16 ounces each time, leeches and fomentations were applied to the abdomen. Effervescing draughts and laxatives, aided by repeated emollient enemata were had recourse to, which produced two or three evacuations, calomel grs. vij. and opium grs. i. was administered at night, followed the next morning by olei. ricini ʒiss, which brought away a large quantity of hardened fæces, the urgent symptoms having subsided, small doses of hydrarg. cum creta, and Dover's powder were given occasionally, and the action of the bowels aided by rhu-

barb and magnesia, latterly under the use of mild tonics, his health was perfectly restored.

The case of cholera, which was erroneously returned as epidemic, occurred in a private who partook freely of unwholesome vegetables, he did not apply for medical aid until after the complaint had assumed all the aggravated forms of the decease. Under the use of calomel and opium, stimulants, brandy and water, sinapisms, and frictions of turpentine, he recovered.

All the other diseases embraced in the return, yielded under the usual remedies.

---

ARTICLE II.—*Case of gun-shot wound.* Communicated by Assistant Apothecary F. B. PAREIRA.

TO THE EDITOR OF THE MADRAS MEDICAL JOURNAL.

SIR,—I beg to send you an account of a very remarkable case, that has presented itself to me, Captain——was wounded on the 7th instant between the hours of 8 and 9 a. m., immediately on entering the stockade at——picket. The ball struck him on the side of the neck, it is supposed from the north-west, while he was looking north-east. He fell on the broad of his back, as if in a fit, and was carried into an adjacent building 6 yards off. On examination, the wound was in the middle of left side of the back. The ball passed backwards, but was not traceable further than an inch, the bleeding was profuse, and whether venous or arterial was not discernible, the ball had not escaped. He was cold, pulseless, and insensible for some minutes. Pressure and cold water to the wound, and cordials, arrested the bleeding, and revived him a little, and he was conveyed to his quarters. He was here undressed, on doing which the ball was felt under the integument on the *right* shoulder about two inches from the acromion process, and was extracted by an incision. It was found to be one of our own bullets, the Burmese bullets being smaller and of an irregular shape, owing

to their bullets not being cast in moulds but beaten round. On re-examining the wound by which the bullet entered 4 oz. of dark venous blood escaped in one spout. The bullet's course was still untraceable. He fainted on being raised to settle his clothes. His pulse was small and feeble, his surface cold and face pale. He swallowed with pain. The ball was supposed to have divided the external jugular vein, and to have passed in front of the spine, without injuring the æsophagus or larynx. Reaction came on about 10 hours after the accident. He had slight paralysis of the extremities, his bowels were opened involuntarily, and his urine was drawn off. When spoken to he answered questions rationally, yet relapsed into delirium immediately afterwards. He continued in this state till the night of the 8th, when he expired at 10 o'clock. He lived about 38 hours after receiving the wound.

The post mortem took place about 13 hours after decease. On removing the integument and plastima the extern al jugular vein was divided, the sterno-mastoid muscle was found almost entirely divided. The ball passed backwards, dividing the *internal jugular* at its inner side to nearly half its width, and $\frac{3}{4}$ of an inch in length ; passed through the *common carotid* leaving two filaments of the artery on either side to support the vessel in its position, there was a coagulum in the jugular about $2\frac{1}{2}$ inches long above the wound, none below, there were coagula both above and below the injured artery, superiorly it extended for $\frac{1}{2}$ an inch into the divisions of the common carotid, below about 2 inches. The coagula in the artery were hard, and bore considerable squeezing, in the vein the coagulum was soft. Behind the artery and in the direction of the wound there was a large clot of blood of the size of a pigeon's egg, the ball then passed to the body of the 6th cer. vert. which it smashed at its right side, here was found the parts of the clothing which the bullet carried with it. It then passed behind the vessels of the right side and lodged itself on the shoulder. It divided no nerves in its course.

The spine was not examined.

That life should be sustained for the long period of 38 hours, after the *jugulars* and *common carotid* were divided, by the efforts of nature alone is certainly wonderful, and will I think prove a case without a precedent. The fainting here operated very beneficially by placing the patient in the most favourable state for the formation of the coagula. The water used was exceedingly cold, (the nights are very cold here just now, I have no thermometer to convey to you the degree of temperature), and did also much to favour the formation of the coagula. The more immediate cause of death would appear attributable to the injury of the spine.

I beg to remain, Sir,
Your most obediently,
F. B. P.

# PART THIRD.

## REMARKS BY THE EDITOR.

GREAT stir is being made amongst the Assistant Apothecaries for the expected vacancy at the Medical College. The Candidates are required to possess high qualifications. They must be proficient in Anatomy and Physiology, and have a good knowledge of the other branches of the profession, as well as a knowledge of practical* mechanics and drawing. Many of the aspirants for the envied post, we believe, are hard at work day and night poring over their "Wilson" and "Carpenter" and taking advantage of every opportunity to trace the courses of the nerves and vessels, and examine their relative positions. We wish them success, and trust that their exertions will not prove unprofitable, though one only can enjoy the fruits of such exertions; yet knowledge should be sought for the satisfaction it affords when attained, and the power it bestows in ameliorating the condition of our less fortunate fellow creatures; apart, from making it instrumental in bettering our circumstances, or in assisting us in the accumulation of wealth. The object in acquiring Medical knowledge, should if possible be a disinterested one, as it affords a better and a sublimer means of being useful and of doing good to those who stand in need of assistance from the possessors of it. Those among the number of candidates who will fail to meet with success, for one only can fill the expected post, we hope will agree with us on these points, and not consider the exertions they may have made as of no value, but on the contrary will, we trust, continue to

* Better if general knowledge in literature formed one of the qualifications.—ED.

labor as before in the hope that opportunities will continue to occur, for which they will be prepared.

---

We have transferred our Proprietary right in this Journal to Mr. S. Bowie, with the understanding that it is to be confined entirely to the Subordinate Medical Service. We have been induced to do this from pecuniary motives as we find that in consequence of many up-country subscribers failing to pay their subscriptions, we are unable to meet the demands of the Printer. The inconvenience arising from the large amount of arrears due, compels us to make this statement, which we would rather not, and trust that our subscribers will now see the necessity of remitting to us without delay the amount due by them; the Journal cannot exist, if pecuniary aid is withheld from those who are striving to keep it up. We can imagine the nature of the conflict, that is very likely to arise in the breasts of our brethren, when they come to part with a rupee out of their small pay, but they must bear in mind that a little self-denial is necessary to gain an object which may prove beneficial to them in the end. Let us then go on striving, and not lag, as what we want is not half gained: let us exert ourselves to get what we want, and when that is obtained, continue to do so to show that we deserve it. This Journal should be considered as an instrument that is likely to assist us in obtaining our object, and as such, demands from us our fostering care. It is the means of conveying information at a trifling cost, to all who subscribe; but its principal object is to show the Authorities what the Subordinate department is capable of doing, and as such it ought under all circumstances to be supported.

---

We must congratulate our Commissioned branch of the Medical Service upon the many steps they have lately received by the retirement of several of the Senior Surgeons. We wish we could say as much for our Subordinate brethren, but regret it is out of our power. Those high up in our department cannot afford to go on the pension list, and while they are able to move about they will continue in the Service, in this they are not to be blamed, for they have borne the burden and heat of the day, and a long and sultry day too; and now in the evening, they very properly take all they can, to enable them to support their large families and enjoy a little of that comfort which before was out of their reach. A sad prospect is this, and those who entered the Service with visions of speedy promotion and ease, will find themselves disappointed. For any extra hand

that is applied for, be it to do the duties of an Apothecary or of a 2d Apothecary, an Assistant is always granted. Extending the already extended column in this manner, will certainly ensure to the passed Apprentice no other change beyond the promotion to the grade of Assistant Apothecary. In this grade he will have to remain for the better part of his life, if it be not prematurely shortened. As it is, it takes from 18 to 20 years to obtain the next grade. At the time the Assistant Apothecaries now at the top of the list entered the Service, we do not believe there were more than half the number of this grade as there are at present : so calculating upon these data, an Assistant Apothecary now at the bottom of the list, may reasonably expect his promotion some 30 years hence ; after he has passed the age of fifty. They say it is a long lane that has no turn, and we fear that the column of Assistant Apothecaries will be a long column insurmountable : but, " while there is life there is hope" is another saying, and while we have reason to hope we shall go on hoping for a change for the better.

---

Amongst our original communications will be found a case of gun-shot wound received from Assistant Apothecary F. B. Pereira at the seat of war in Burmah. It is interesting in many points and we trust it will prove acceptable to our readers, but we are sorry to see that Mr. Pereira has not, perhaps from want of time, taken a little care in making the case more intelligible by stating to what side of the body the injured vessels belonged and at what side of the neck the ball entered. If Mr. Pereira will kindly let us know all about the supposed course of the ball from the point of entrance to the spot it was lodged in, he will put us under an obligation. We must again call the attention of our brethren to the scantiness of that portion of our Journal set apart for original matter. We are certain that many of them might contribute something towards it if they would only exert themselves a little. If they would but reflect upon the many and great advantages that are to be derived by all the members of the Service from our Journal, no one would we are sure refuse to exert himself in so laudable an undertaking, and we hope that the present dearth is not owing so much to a want of inclination, as to forgetfulness of the necessity that exists on their part for such exertions.

---

We have much pleasure in publishing the following letter from the Chairman of the Court of Directors to our address in reply to a letter of ours accompanied with the first Volume of

our little Journal. This must prove highly gratifying to our brethren of the Department, and we sincerely trust they will take advantage of it. Amelioration of their condition can only be gained by a steady perseverance in the path they have struck out—we know there are many difficulties to be overcome before their object can be achieved but we can see no other way of affecting it, and the mode we have adopted promises fair, so that it will entirely be the fault of our Subordinate brethren should it fail.

No amount of private interest or favour will ever give them any position as a body. Their best friends must be their own exertions in acquiring professional knowledge and literary attainments, and displaying them to the view of the public whenever opportunities offer. This is the surest way to advancement and one that we have found from experience to be the only true and certain road to preferment.

*India House, 24th February*, 1853.

SIR,—Allow me to offer you my best acknowledgments for your kindness in sending me a copy of the 1st Volume of the *Madras Journal of Medical Science* which accompanied your letter of the 16th instant, and at the same time to congratulate you upon having been instrumental in commencing the publication of so useful and creditable a work.

I am Sir,
Your obedient Servant.

Mr. G. W. FLYNN, J. W. HOGG.

---

WE have much pleasure in publishing amongst our Miscellanies the notes taken by Mr. BOGG of Dr. VAN SOMEREN's lectures on Natural Philosophy. They are given in a clear and concise form. These notes if carefully and attentively studied will afford quite sufficient information upon the subject and we strongly recommend them to the notice of our Subordinate brethren.

---

WE have to apologise for the late appearance of the present No. occasioned by press of business, and promise that there will be no delay for the future.

---

*Erratum.*—In our last issue at page 85 the 10th line read "*no* other feelings" instead of "other feelings."

---

WITH this number our editorial connexion with the Journal ceases, as we intend shortly to resign the Service. We have transferred the work to such hands as will do justice to it. And we must now bid our brethren of the Service farewell wishing them every success in life and in the undertaking we have had the pleasure to commence.

# PART FOURTH.

## SELECTIONS.

## LECTURES ON DIGESTION, RESPIRATION, AND SECRETION,

## GIVEN AT THE ROYAL INSTITUTION,

### TO THE MEMBERS AND TO THE PUPILS OF ST. GEORGE'S HOSPITAL.

BY H. BENCE JONES, M. D., F. R. S.,

Physician to St. George's Hospital.

[Continued from page 99.]

## ON THE GASTRIC JUICE.

The subject, gentlemen, of my lecture to day is the gastric juice. All of you have probably heard of a Canadian, St. Martin, who had a fistulous opening in his stomach, through which the process of digestion was watched by Dr. Beaumont. In consequence of the observations made on this Canadian, we obtained the most accurate information regarding the nature and properties of the gastric juice. By making a similar opening in the stomach of the dog, much more has been done regarding the digestion of animals. During the last ten years the most important researches have been carried on by making these artificial fistulous openings.

It has been found that the stomach, when empty, has no acid reaction; that the mucus of the stomach is not acid, but that when the

stomach is irritated, either mechanically through the fistulous opening, or by food being taken, a highly acid liquid is poured out; this liquid has been called the gastric juice. It is very difficult to obtain any quantity of it free from food or from saliva. Mechanical irritation through a fistulous opening is clearly the only mode by which it can be obtained in a free state, that is, unmixed with food or other secretions; and it is difficult in this way to obtain any quantity of fluid. Frerichs, who has written the latest and best work on digestion, has given us an analysis of the gastric juice obtained by mechanical irritation from the stomach of the horse.

*Gastric Juice.—Horse.*

| | |
|---|---|
| Water... ... ... ... | 98·28 |
| Solids... ... ... ... ... | 1·72 |
| Ferment soluble in water ... ... | 0·90 |
| Ferment soluble in alcohol... ... ... | 0·08 |
| Fat... ... ... ... ... | Trace |
| Chlorides, Sulphates ... ... ... ... | 0·64 |
| Lime, salt, and iron... ... ... ... | 0·10 |

These are not the absolute numbers, true in all cases, but they are sufficiently accurate for the purpose of showing the general composition of the gastric juice. There are ninety-eight parts of water (more even than in the saliva and the pancreatic juice) and two parts only of solid matter. In this analysis you see no mention made of the acidity of the gastric juice; the acid is classed partly among the salts, and partly, possibly, in the ferments. It is not established what the nature of the acid certainly and positively is; but I shall have occasion to speak much more on this subject in a few moments. The gastric juice, when obtained free by irritation, is said to be clear, transparent, colourless, or slightly yellow. Its specific gravity is very little above that of water; it is very acid; it does not become cloudy with heat; it is remarkable for remaining long without undergoing decomposition; even when mouldy, it is found that it still digests. Generally, we may state the gastric juice contains water, albuminous substances, and salts. I purpose taking these separately, and considering their action upon the different substances which are taken as food.

It is comparatively easy to obtain gastric juice mixed with food and saliva. You already know the composition of saliva,

and can clearly make allowances for it and recognize what is due to it; but it is not at all easy to make a perfect allowance for the food mixed with the gastric juice. I have before me some specimens of this fluid, not perfectly free, but mixed with certain ingredients of the saliva and of the food. I have one specimen obtained from the stomach of a healthy man, two hours after animal food and distilled water were taken. The contents of the stomach were rejected and thrown on the filter, the solid matter remaining and the clear liquid passing through. We have then, in this liquid, a certain portion of saliva, a certain quantity of distilled water, and those ingredients of the animal food which could be dissolved after two hours' action of the juice. I told you of the acids and the soluble salts existing in flesh; no doubt some portion of these, including some lactic acid, would be dissolved in two hours, and so also a portion of the organic constituents of the flesh would be taken up. I have also, in this specimen, the gastric juice from the contents of a stomach two hours after vegetable food was eaten. The food that appeared to me most desirable to be taken was potatoes, because they contain the smallest amount, as you will see in a future lecture, of albuminous substance, and I wished especially to see the action of the gastric juice upon potatoes. The process by which the fluid was obtained was precisely similar to that of obtaining it from animal food; this liquid, therefore, is gastric juice, diluted with distilled water, and containing those parts of the potatoes which could be dissolved in two hours; it clearly, also, contains the soluble constituents of the saliva. I might mention, before proceeding to examine these fluids, that flesh has a certain degree of acidity; and potatoes also have an acid reaction, containing hydrochloric acid, malic acid, and phosphoric acid. When potatoes are boiled they lose a good deal of these acids, being partly dissolved in the water used to boil them. Other most interesting substances exist in potatoes, on which I have no time to dwell,—such as these beautifully crystalline substances known as asparagine and solanine; the latter is obtained from the seed.

I must proceed with the examination of these liquids, which are mixtures of gastric juice and saliva, with the soluble constituents of the food. The saliva was alkaline, and, as far as it is present, it must tend to reduce the acidity of the gastric juice; nevertheless, the mixture shows, as you see by the common test of litmus paper, an intense

acid re-action. The acid re-action of the gastric juice after vegetable food is scarcely, if at all less then that after animal food ; perhaps it is even greater. I might show you the acidity of the mixtures still more dis[illegible]ow the effervescence produced when bi-carbonate of potash, for instance, is thrown into them. If the paper test could mislead us, the effervescence showing the displacement of the carbonic acid from the bi-carbonate of potash is most convincing.

What the nature of the acid is which causes this re-action has not yet, and cannot yet be fully determined. Dr. Prout, in his admirable experiments made many years ago, came to the conclusion, and I believe the right one, that it was hydrochloric acid ; and, if authority might be admitted in chemistry, that of Dr. Prout would be conclusive on this point. But later experiments seem to throw some doubt on this point ; and it is thought possible that, at times, no hydrochloric acid exists in the stomach, but lactic acid instead ; it is highly probable that not only do hydrochloric acid and lactic acid exist in the stomach, but also acetic acid, butyric acid, and phosphoric acid. These five acids pretty certainly exist there at different times, if not altogether. It is possible that lactic acid, acetic acid, and butyric acid, which are organic acids, may come from the changes in the starch and sugar taken as food, of which I have before spoken ; but phosphoric acid and hydrochloric acid are not organic acids, and they cannot come from food, unless it be that a very small quantity of the latter is found in the potatoe, which is by no means certain. But supposing a portion of hydrochloric acid to be present in the potatoe free, we have still phosphoric acid, which does not occur free in our food. The great portion, both of phosphoric acid and hydrochloric acid, which we take into the body, goes in as chlorides and phosphates, which are taken in all kinds of food. It is highly probable that chloride of sodium (common salt) is the source of much of the hydrochloric acid which exists in the gastric juice, and that the phosphates are the sources of the phosphoric acid. Whatever the means may be by which these inorganic acids are separated from the bases, I must not now dwell upon them. Whether it be by electricity, or nervous action, or muscular action, at present it must suffice for us, that hydrochloric acid and phosphoric acid go into the body as salts, combined with alkalies, and in the stomach the acids are set free, and thus produce the acid re-action which you see is present.

When the stomach is empty, there is, as I have told you, no acid in it; for the most part, the re-action is then neutral or alkaline. In my diagram the centre horizontal line may be regarded as the line of neutrality, representing the condition of the stomach when empty. As soon as food is taken, irritation begins, and acid is poured out in increasing quantities, until a certain time after digestion, (say two hours,) when it would be at its highest. This is represented by the rising of the line. The acid remains in the stomach for some time, perhaps two hours or four hours, according as the digestion is quick or slow; and as the food begins to be absorbed, or to pass out at the pylorus, the acid decreases until the stomach becomes empty, when there is a neutral re-action again. Food is again taken, and there is a gradual increase of the acid as before; afterwards, as the food passes out, or is absorbed, the acidity decreases, until the stomach is again in a neutral state.

If one equivalent of hydrochloric acid is set free in the stomach, it is quite clear that one equivalent of alkali must be set free somewhere else; and my reason for believing that soda is actually liberated at this time in the blood is this,—that when the gastric juice becomes more acid other secretions from the blood become more alkaline; and when the acidity of the gastric juice is highest, that of the serum is probably lowest. Hydrochloric acid has gone into the stomach, and soda is set free in the blood; the hydrochloric acid being, of course, separated from the soda, leaves so much more of the latter to have its re-action in the blood; hence the opposite state of the alkalescence of the blood and the acidity of the gastric juice. When the acid of the gastric juice returns with the food into the blood, the serum, must become less alkaline than it was before. These variations take place rapidly, being completed in from three to eight hours. I shall show you, in another lecture, that the variations in the alkalescence of the serum are demonstrated by the variations in the re-action of the urine secreted at different periods of the day. Thus much, then, for the acid reaction of the gastric juice. It is one of its most striking and one of its most important peculiarities. That it is acid is quite certain; that the acid varies in quantity is equally clear; that the acid is frequently and partly, if it be not always and entirely, hydrochloric acid, is also certain; and that lactic acid is probably present, there can be no doubt; from the latest experiments,

Whether the other acids I have mentioned occur more than occasionally is not yet determined.

I come, secondly, to the next most important constituent of the gastric juice—the albuminous substance, or ferment, named *pepsin*. This substance may be obtained pure in the following way:—A piece of the stomach—experiments have chiefly been made with the fresh stomach of a pig—is taken, and the mucous membrane is separated from the sub-cellular tissue which lies below, which, if treated with boiling water, would give rise to gelatine; this mucous membrane is washed in water, to get rid of any impurity on the surface; it is then soaked in distilled water, and, when quite soft, a portion of the mucus is scraped off with a spatula. The matter scraped off is treated with a little acidulated water; it rapidly dissolves, and the solution becomes tolerably clear. The solution is precipitated by alcohol, and the precipitate is called pepsin; when redissolved in acidulated water, it constitutes the solution of pepsin, which has been occasionally used as medicine. This substance is soluble in water, as I have said, and still more soluble in dilute acid; precipitable by bichloride of mercury; perfectly precipitated by basic acetate of lead and gallic acid; imperfectly by neutral acetate of lead; does not become cloudy when boiled; with dilute hydrochloric and lactic acid it possesses strong digestive action; but, like gastric juice, it loses this power when boiled, when treated with absolute alcohol, and when neutralised by alkalies. It is not clearly albumen, but closely approximates to it; differing from it as much as the synaptase or diastase differs from the proper albuminous substance existing in the vegetable, as much as yeast differs from the albuminous substance, or as much as any of the albuminous substances differ from one another. That pepsin is contained in the digestive fluids which I have here, may be made plain thus:—A little of the fluid is taken, and nearly, not quite, neutralised with potash, and then mixed with a considerable excess of alcohol, when an albuminous precipitate will be formed. (Experiment.) I have here two precipitates thus obtained, one from the fluid after animal food, and the other after vegetable. That from the animal fluid is the most bulky, because the pepsin with the acid has dissolved a portion of the meat, and meat, we know, is a much more albuminous substance than potatoes. Wasmann, a German physiologist, says that one sixty-thousandth part of this pepsin, when dissolved in water and acidified, will dissolve one part of coagulated al-

bumen in from six to eight hours. That a considerable quantity of albuminous substance exists in the fluid obtained after the digestion of animal food, will be made plain if I add to it a little sulphate of copper and liquor potassæ, when a purple colour will be produced.

The peculiar properties of the pepsin you will see more clearly by considering the action of the gastric juice on the different constituents of the food of man. The water and the free acids of the gastric juice can by themselves clearly dissolve alkalies, earths, and those metals which are soluble in water and acid, but, though the water and the acid can dissolve these, we have to consider how the other substances, —the non-nitrogenous substances,—are acted upon ; or are they not acted upon by the gastric juice at all ? The most accurate researches, made by means of fistulous openings in animals, show that, if all the saliva is kept carefully away from the stomach by a ligature passed round the œsophagus, and if food is conveyed to the stomach through the artificial opening, the albuminous portion is dissolved as well as if the saliva had acted upon it but if starch is thus placed in the stomach no action takes place ; starch, indeed, may be mixed with the gastric juice, and be kept at the temperature of the body for some hours, without any change taking place. The re-action which I showed you of the saliva upon starch will explain why the starch is not acted upon under these circumstances. If no saliva passes into the stomach, there is none of that peculiar ferment present which has the property of acting upon starch ; but if the saliva be allowed to pass through the œsophagus, a totally different result is obtained, for then very much of the starch is changed into gum and sugar. The experiments of the German physiologists show that this change does not depend in the least upon the action of the gastric juice. That the change actually does take place, I might perhaps occupy your time a moment in showing. If I take some of the fluid which, in the stomach, has been acting upon the potatoes,—this fluid, in which gastric juice and saliva are present, —and apply the ordinary test for sugar, sulphate of copper and liquor potassæ, a reduction will take place rapidly, showing that the saliva has converted the starch of the potatoe into sugar. (Experiment.) If, however, I could have tied the œsophagus, so as to prevent the mixture of saliva with the gastric juice, I have not the least doubt, judging from the German experiments, that not one particle of this reduction would have taken place. That the whole of the starch is converted into gum

and sugar, may be shown by a very easy and decided experiment. I have here the contents of a stomach two hours after digestion. If I take a portion, and add the test for starch, (iodide of potassium, dilute hydrocloric acid, and nitrite of potass,) a red colour will be produced, indicating the presence of dextrin; while, if there had been any starch present, I should have had more or less of a blue tint. (Experiment.) I ought to tell you, that, in the process of cooking, a part of this change of the starch into gum certainly takes place; but that much starch still remains after cooking may be shown by an easy experiment,—that of putting a little iodine upon a cooked potatoe, when the presence of starch will be apparent.

The gastric juice has no solvent action on fat; the temperature of the stomach may melt it, but the gastric juice does not dissolve or subdivide it.

The proper action of the gastric juice, then, is upon albuminous substances; and it is necessary that we should look a little closer to this action. If muscle, or albumen, such as the white of an egg, or if fibrin or casein be treated with the artificial digestive fluid, or if they are taken into the stomach and afterwards taken out and examined, it is found that the albumen has not then the common re-actions of that body—that it does not re-act with ferro-prussiate of potash with acids, and with heat, in the way that ordinary albumen does. What change, then, has taken place in the albuminous substances? It has been said that they are changed into protein; but this is a mistaken theory. The digested muscle, of which you saw a portion precipitated by alcohol, is not a body free from sulphur and phosphorus, as protein must be. It is found, also, that these albuminous substances, after they have been acted upon by the pepsin and the acid, do not contain more water than before, and that there is no formation of that body which has been called incipient albumen. What, then, does occur? One theory, which is very beautiful, and would make the process very plain to us, is this: that the pepsin and the acid combine together to form what has been called hydrochloropeptic acid— a name that could only have come from Germany. This has been supposed to be formed something like sulpho-saccharic acid or sulpho-vinic acid; and it is said that this compound acid combines with the albumen, the fibrin, and casein, forming salts which have different re-actions from the original substances. This would be a very beautiful theory, but there are not sufficient facts

to warrant it. Yet the albuminous substances have undergone some changes; and thus a different name has been given to them, though we do not know what the changes actually are; they are called, after they have been acted on by pepsin and hydrochloric acid, "peptones;" thus there is albumen peptone, fibrin peptone, gelatine peptone, etc. Gelatine, for instance, which you know is a body so named from its property of forming a jelly, loses this property when acted upon by the acid and the pepsin together; it loses it property of gelatinizing, and of being precipitated by chlorine, and thus is converted into gelatine peptone. Dilute acid alone does not produce this effect,—it is effected by the pepsin and acid acting together. I do not profess to tell you definitely what the peptones are; it is sufficient for my purpose to point out the name, to mark that some change has taken place by the digestive action. The change is probably at most analogous to the change of starch into dextrin. You may form these peptones out of the body by taking natural gastric juice or artificial digestive fluid, and digesting them with coagulated albumen, fibrin, casein, legumin, gluten, until these are dissolved. The fluid is then filtered and evaporated.

The nitrogenized pepsin and the acid must act together in the process of digestion. If, during this process, I neutralise the acid by mixing it with alkali, however energetic the pepsin may be, digestion will not take place. In a previous lecture, I showed you some white of eggs treated with hydrochloric acid, and you saw how little was dissolved; and even now, after some days, the acid alone has failed to dissolve it; but if I were to mix it with the pepsin, and subject it to heat, I should find a much more rapid action would ensue. It is clear that both the pepsin and the acid must be present, and act simultaneously, to produce a solution of the albuminous substances, and to form the peptones. Pieces of bone are acted on in a totally different way when treated with dilute acid alone, and when treated with gastric juice. Lehmann has found that the same quantity of pepsin, and the same quantity of hydrochloric acid can have their action increased by increasing the quantity of water. Thus the conclusion is (within certain limits of course) that taking water is not a hindrance to digestion, a certain degree of dilution being necessary to enable the albuminous substance to dissolve. Lehmann found also that the digestive power of the same quantity of pepsin, say ten or twenty grains, could be increased by increasing the quantity of acid. He found that

a certain proportion of the acid of water and of the pepsin must be in action to form the peptones. He also found the equivalent quantities of hydrochloric and lactic acids can replace one another in artificial digestion, and that acetic acid and phosphoric acid have much less power than hydrochloric and lactic acids. Too much acid, as well as too little acid, can stop digestion from taking place; so that, if too little of either substance was present, the formation would not take place. The digestion of starch may be completed with saliva and water only, while the digestion of the albuminous substance is not at all effected by saliva; and reversely, the digestion of the albuminous substance may be effected by the pepsin, acid, and water of the gastric juice along, without saliva; while starchy substances will not be changed at all in the stomach, on account of the absence of the proper quantity of saliva; then the starch requires to be passed into the bowels to have the further action of the pancreatic juice.

The conclusion, then, to which we come is, that the proper action of the gastric juice is the solution of albuminous substances. This action is promoted, first, by *temperature*; for it is found that at an ordinary temperature, say from 54° to 60°, the temperature of this room, no solution takes place. I have the contents of a stomach, which have been here for many hours, and probably there is not now a particle more in solution than when the contents were first removed; the temperature of the room has been sufficiently low to check all further action; and it must be raised to 96° for a further solution to take place. The next great agent is *motion*. During the time of digestion, a certain motion is, without doubt, constantly taking place in the stomach; but digestion may take place without any such contraction or gentle rubbing as one may suppose the stomach to be undergoing: this is proved by the fact that food will digest when placed in perforated balls, which allow the mixture of the food with the gastric juice. Thirdly, *salts* are of importance in the process of digestion. Common salt, without doubt, promotes the secretion of acid by its irritation and by its chemical action on the mucous membrane of the stomach. If very much common salt, however, is taken, the process of digestion appears to be retarded. So also with other salts. It is probable that even *calomel* has this property of stimulating the mucous membrane of the stomach, and thus, at times, of aiding the digestive process. Another grsat agent in promoting the action of the gastric juice, is *the re-*

*moval of substances as soon as they are dissolved.* As soon as substances are dissolved they are enabled to escape, some of them by being absorbed into the veins, and some of them by passing out through the pylorus. That some of these soluble matters are constantly being removed from the stomach by the veins is proved by tying the pylorus, and finding that in the case (for instance) of the stomach filled with milk, the watery part of the milk will be taken up from the parietes of the stomach by the veins, whereby the casein is left and is much more slowly dissolved, it is certain that the solution is always going on, that a part of the contents of the stomach is always being dissolved, while the process of digestion is proceeding. Lastly, it has been shown by the experiments of German physiologists, that atmospheric air is not at all necessary to aid digestion. If the contents of a stomach be placed in a perfectly air-tight vessel, and exposed to a proper temperature, digestion will take place.

We come, then, gentlemen, to the conclusion, that the ferment in the saliva is the substance which acts chiefly upon the most important non-nitrogenous constituent of our food, namely, starch ; and that the ferment in the gastric juice acts chiefly upon the albuminous or nitrogenous constituents. Agents that stop fermentation stop digestion ; for example, strong acids, alkalies, heat, alcohol. The stomach ferment differs from the saliva ferment, in losing its action when heated or when treated with strong acid or alcohol ; also by its necessary union with an acid. The acid determines the mode of action and regulates it. If carbonate of potash or soda is added in excess, a totally different action of the ferment ensues, decomposition begins. Slightly altered ferment, like slightly altered yeast, may set up lactic or butyric acid fermentation and there is reason to suppose that acetic acid fermentations may also occur. You will remember that the substances existing in the food I divided thus.—Water, which can be taken up of itself ; mineral matters, which are soluble in water or in dilute acid ; non-nitrogenous organic substances, some soluble, as sugar, and others, as starch, insoluble in water, but acted upon immediately by the saliva ; others, as cellulose, insoluble even by the saliva or gastric juice, and which cannot, therefore, serve for the nutrition of the body ; and, lastly, nitrogenous substances. The fluid which acts upon this last class of substances is the gastric juice ; it is the proper agent for rendering them soluble. It converts the albumen, fibrin, and casein, into

albumen peptone, fibrin peptone, and casein peptone, which are soluble in water, and are, therefore, easily taken up into the body to serve the purposes of life. It remains only for me to mention the fatty substances, and I shall take the opportunity, in my next lecture, more especially to dwell upon these, when speaking to you about the nature of the bile.—*Medical Times, May* 24, 1851.

*(To be continued.)*

---

ON

# APOPLEXY AND EPILEPSY;

AND ON AN

## HOSPITAL FOR EPILEPTICS.

*Being an Outline of the Croonian Lectures, delivered at the Royal College of Physicians in* 1852.

By MARSHALL HALL, M.D., F.R.S.

---

I propose tracheotomy, not as a remedy for apoplexy, or for epilepsy; but for stertor or paralytic Laryngismus and its effects, in the former malady; and as a preventive and security against spasmodic Laryngismus and its effects—viz. Convulsion, and the injury apt to be inflicted on the cerebrum and the medulla oblongata, on the mind and limbs, in the latter dire calamity.

In the apoplexia gravior, with paralysis of the respiratory sector, tracheotomy affords the chance for life; in the epilepsia gravior, tracheotomy supersedes the laryngismus, and the Convulsion and its dire effects.

---

### LECTURE III.

### On an Hospital for Epileptics.

203. I have long meditated the institution of an Hospital for the poor afflicted with Epilepsy. I have hitherto been deterred from prosecuting the idea, by the reflection that it would be injurious to those liable to seizures of this direst of chronic maladies, to be witness to the frightful scenes presented by their companions in this misfortune. I believe I have, in a great degree, obviated this objection.

204. Inorganic epilpsy occurs, as I have said, in two forms: the first, the *epilepsia mitior*, or the slighter epilepsy; the second, the *epilepsia gravior*, or the graver epilepsy.

205. I believe the slighter epilepsy depends on a condition of the muscles of *the Neck*, which I designate *trachelismus*, and by which the flow of blood from the brain and spinal marrow is impeded. This is only to be prevented by strict and persevering attention to avoid its exciting causes, which are, in general terms, the *emotions* and the *irritations;* the latter being chiefly dental, gastric, enteric, uterine, &c.

206. But the severer epilepsy depends upon another condition,—that of *the Larynx*, termed *laryngismus*. As trachelismus impedes the flow of blood from the brain, so laryngismus impedes the ingress and egress of air to and from the lungs, especially the latter. The larynx is, in fact, more or less closed; and upon this closed larynx violent expiratory *efforts* are made. These events induce, in their turn, still greater impediment to the flow of blood from the brain and from the upper part of the spinal marrow, and, as a further consequence, all the direr forms and effects of this dire disease,—viz., convulsion, convulsive falling, or rather dashing to the ground, &c. &c.

207. Now, the influence of this laryngismus, and all these dire effects, are, I believe, obviated by *Tracheotomy*.

208. The epileptic patient on whom tracheotomy is effectually performed is preserved from all that is included in the *graver* form of the disease:—the patient may *fall*, but he is not thrown down violently, nor does he become affected with deep lividity of the countenance, convulsion, foaming, &c. He no longer presents the *frightful* spectacle to which I have adverted in the first paragraph of this Lecture! The objection to the institution of an hospital for these afflicted persons is therefore removed.

209. Having made these few preliminary remarks, I proceed to state my views in the suggestion that the duty of establishing an Hospital for Epileptics becomes specially imperative upon the humane and the charitable.

210. Epilepsy is indubitably the direst of human maladies. It dashes the afflicted patient with convulsive violence to the ground, and exposes him to the danger of falling—down stairs—into the fire—or water—or under carriage wheels, and to the infliction of terrible wounds, injuries, burns, &c. It incapacitates him for any employment. It may impair his faculties, or cripple his limbs. Not unfrequently the attack passes into a fit of mania; occasionally it proves fatal, by in-

ducing a state of apoplexy, or, still more speedily, from its violence, by spinal syncope. The ancients designated it the *Herculean malady !*

211. The epileptic becomes, then, from his peculiar helplessness and danger, the object of our peculiar care. It is his cause which I plead !

212. Happily, besides the care which may be taken of these afflicted persons, much may, as I believe, be done, by care, by regimen, by medicine, and by new modes of treatment, to mitigate, if not to remove, their dire calamity.

213. Each seizure is induced by one or more of a series of exciting causes, some of which, and these the most usual, may be avoided under judicious and watchful management.

214. The *severe* forms of the disease depend on the condition of the respiratory apparatus which I have described, and which may be obviated by a simple operation. By means of this operation we are enabled to avert the violence of the malady. We cannot, by *it*, avoid the cause or causes, or their first effects, the slighter forms of the affection ; but we *can* avoid the severer, the graver, the direr consequences of these causes. We can preserve the patient, as I have stated, not from *falling* indeed, but from being dashed to the ground violently and convulsively ; we can secure him from *convulsion*, and all its dire effects on the mind and on the limbs, and save him from mania, amentia, or paralysis !

215. Nay, we can, in a certain number of cases, yet unknown, even *cure* the patient ; for, by avoiding the severe forms of the disease, we obviate the *susceptibility* to future attacks, induced and left by them. One patient, who used to experience a severe attack twice in every week, has had no attack whatever during twelve months. Another epileptic, from *hereditary* epilepsy, during four and twenty years, having the severest attacks frequently, and falling dangerously, on the fender, or into the fire, has, during four months, had the milder attack only.

216. That we may take *care* of those poor patients ; that we may change their malady from the direst to a comparatively, or even to a positively, mild one ; and, in a certain number of cases, even *cure* it entirely—is certain ! Who will not lend a helping hand in so good a work ?

217. My project is to bring those afflicted with epilepsy under one roof,—for shelter, for protection, for safety; to place them under a systematic, gentle course of medicine, of diet and regimen free from stimulus, of exercises free from all effort or fatigue, of occupation free from excitement or emotion; to arrange their bed so that the head may be high; to clothe them, and adopt measures for keeping their feet warm and dry, &c. &c.—for such are found to be important measures in the treatment.

218. Having thus done all that kindness and art can suggest for the solace and cure of our patients, the next point is to ascertain, in those whose cases prove fatal, what are the morbid appearances on post-mortem examination. These appearances may not, as is too generally supposed, be the *disease*, or the *cause* of the phenomena; but the *effect*.

219. Let us suppose that we meet with congestion, or ecchymosis, or a clot of blood, or effusion of serum; or even softening; or, in chronic cases induration. Are these the disease, or the cause of the disease? Possibly not. They are even probably the *effect* of the violent congestion to which the nervous centres may have been subjected during the paroxysms. Without attention to this *living* pathology, even the morbid anatomy may lead to erroneous conclusions.

220. Why should epilepsy, more than apoplexy, be treated *empirically*? What should we say to the proposition to trust the treatment of apoplexy to the sulphate of zinc, the cotyledon umbilicus, &c.? Why should we act less *rationally* in the case of epilepsy?

221. The pathology of apoplexy and the pathology of epilepsy should be equally investigated, and upon this pathology the treatment should be founded. I would especially recommend that, whilst every exciting cause is removed, and the general health carefully maintained, the pilula hydrargyri be given for the removal of organic effects, and the strychnia for the diminution of the susceptibility of the nervous centres, equally left by the epileptic seizures.

222. The real value of particular remedies is also still entirely unknown, notwithstanding the occasional publication of successes.

223. In an *Hospital for Epileptics*, the *truth* in regard to these topics may be ascertained; whilst we give the patients the advantage of every care, of every aid, of every remedy.

224. So much can scarcely be said to be accomplished by any of our other Hospitals.

---

225. It is not, indeed, yet known what may be accomplished for the epileptic by an *extreme* and *sustained* attention—

226. 1. *To diet and Regimen, excluding all Stimulants and Indigestive Substances ;*

227. 2. *To the Secretions and Excretions ;*

228. 3. *To Security against all Emotion and Excitement ;*

229. 4. *To Exercises and Occupations, avoiding all Effort and Fatigue ;*

230. 5. *To Clothing, and especially to warmth and dryness of the Feet ;*

231. 6. *To a raised Posture during Sleep, &c.*

232. I mean such a *degree* of attention to diet and regimen, to the secretions and excretions, &c., and so sustained, as has never been attempted before !

---

233. The great difficulty, in the treatment of epilepsy in private practice, is the impossibility of securing the necessary *degree* of attention to all this regimen. In an Hospital, this will be readily accomplished. It must be the great object of the Institution.

234. In this manner, I am pursuaded that many more poor patients will recover from epilepsy than rich.

235. How instructive will be a series of statistics on this subject ! The real value of regimen ; the real value of remedies ; the real value of tracheotomy ; the real value of post-mortem appearances—will become known.

---

236. The great difficulty, in regard to the *Hospital,* will be that of the selection of cases. Our expectation must be reasonable. Every one knows how little can be expected in the congenital, the hereditary, the inveterate cases,—not from the violence of the seizures, which may be averted, but from the organic condition, cause or effects, of the malady.

237. In such cases, the *care* of the afflicted patient must be our chief object. But, in very many others, I am pursuaded, as I have stated, that we ought not to despair of *Cure*.

238. I conculude this outline with the following Sketch :—

1. *The Emotions* ; } *Spasmodic* } *Threatenings* } *Congestion of* } 1. *Paralytic, or* } 1. *Stertor and augmented* } *Superseded by Tracheotomy.*
2. *The Irritations* ; } *Trachelismus* ; } *of* } 1. *The Cerebrum* ; } 2. *Spasmodic* } *Coma* ; } }
induce } 1. *Apoplexy* ; } 2. *The Medulla* } *Laryngismus* ; } 2. *Convulsion, and its Effects* ; }
2. *Epilepsy* ; } *Oblongata* ; } *and* }
*or* } *with* }

*Recapitulation.*

239. 1. The cases of apoplexy and epilepsy of inorganic origin have not before been duly discriminated and investigated ;

240. 2. Their causes are *the Emotions* and *the Irritations* ; the former acting directly, the latter diastaltically.

241. 3. *First*, on the muscles of *the Neck*, and

242. 4. *Secondly*, on those of *the Larynx* ;

243. 5. In the former case, the affection designated *Trachelismus* is the cause of the compression of the *Venous Network of the Neck*, of impeded return of blood from the encephalon, and of

244. 6. The *milder* forms or threatenings of Apoplexy, and of Epilepsy ;

245. 7. In the latter case, the affection is designated *Laryngismus*, and it is of two kinds—viz.

246. 8. 1. Cerebral, and apoplectic or paralytic, with partial closure of the larynx, assuming the form of laryngeal stertor,—chiefly, but not entirely, in *in*spiration—as in the experiments of Legallois ;

247. 9. 2. Spinal, and spasmodic, with still greater closure of the larynx, and still more impeded respiration, and especially *ex*piration.

248. 10. The former of these is associated with apoplectic coma ;

249. 11. The latter is the essential condition of *Convulsion*, and its effects ;

250. 12. The effects of trachelismus would be superseded by venæsection ;

251. 13. The effects of laryngismus are superseded by *Tracheotomy* ;

252. 14. By this measure, paralytic laryngismus, or stertor, and its effects, or the *apoplectic state*, when of inorganic origin, is *removed* or *mitigated*;

253. 15. By this measure, *Convulsion*, with its effects, is *prevented*;

254. I trust that, whilst convulsion is thus prevented, all its dire *effects* will be obviated; and that one of these, the susceptibility to returns, may itself subside, and the dire disease be entirely cured.

255. I conclude this recapitulation by observing that—

1. The difference between the Apoplexia mitior and the Epilepsia mitior, is the difference between obscure and evident Trachelismus.

2. The further difference is that between psychical and spasmodic symptoms, or that between affection of

1. The Cerebrum, and of
2. The Medulla Oblongata.

3. The difference between the Apoplexia gravior and the Epilepsia gravior, is that between

1. Paralytic, and
2. Spasmodic Laryngismus.

4. Apoplexy, when extreme, is attended by Convulsion; extreme Epilepsy induces apoplectic Coma, &c.

5. Both may terminate fatally—

1. Without post-mortem appearances;
2. With Congestion only;
3. With the *Effects* of this latter; viz. ecchymosis, rupture; serous effusion; softening.

## *Conclusion.*

The terms *Trachelismus* and *Laryngismus*, which I have adopted in these pages, when viewed in connexion with their exciting causes, the modes of action of these, first on the muscles of *the Neck*, and *the Larynx*, then on the *Venous Network* of this region, and then on the *nervous centres*, contain whole volumes of *living Pathology*.

This living pathology I recommend for further cultivation, in the place of that mere *caput mortuum* presented in post-mortem, or it might be designated post-morbum, appearances.

I also recommend that this pathology be pursued in a special manner in our private practice. It never can be adequately investigated in the patients who resort to our *Hospitals*, whose cases are chiefly those of organic *Origin*, or involving organic disease as *Effects*, of the previous trachelismus and laryngismus.

I would finally observe, that, although I have treated of trachelismus and of laryngismus as distinct, and of apoplexy as cerebral, and of epilepsy as spinal, generally, yet each of these involves the other. Trachelismus includes the larynx ; laryngismus adds to trachelismus and its effects. Apoplexy beginning with trachelismus is spinal; for trachelismus is the result either of direct or diastaltic spinal action ; epilepsy, in its turn, is cerebral in one of its immediate and many of its remote *effects*.

*The Neck, the Larynx* inclusive, is the *medical Region* in which all these influences *meet*. By means of the structure and actions in this region, the whole *class* of the diseases of the nervous centres, of inorganic origin and of paroxysmal form, the threatenings of apoplexy and of epilepsy, are explained ; and I trust we may no longer say, with Esquirol—" Les Symptômes de l'epilepsie sont tellement extraordinaires, *tellement au-dessus de toute explication physiologique ;* les causes de cette maladie sont tellement inconnues, que"—&c. Indeed, I think that in few diseases are the links of causes and effects, in a rather lengthened chain, so distinctly traced and explained. This has been accomplished by means of the light which has been thrown upon the whole subject of the diseases of the nervous system by our knowledge of *the Spinal Syetem*. This knowledge is as a torch in the hand of the practical physician, and the source of all *Diagnosis* in regard to these diseases. *Physiology*, *Theory*, and *Observation*, become *allies*, and lend each other a mutual aid.

I trust I may be allowed, in conclusion, to express a hope, that the suggestions which fill the preceding observations may be received with some degree of benevolence. They are amongst my last legacies to my noble and exalted profession—noble and exalted, were detraction within its own ranks, and derogatory views on the part of the public, to cease, and its Science to be duly appreciated. In Medicine alone is discovery a misfortune to its author.—*Lancet, May* 15, 1852.

## PATHOLOGY AND PRACTICE OF MEDICINE.

### *On the Proportion of the Subjects bitten by Mad Animals, who become affected with Hydrophobia.* By Professor RENAULT.

M. Renault, Clinical Professor at the Veterinary School at Alfort, has recently presented to the Academy a valuable Report, adverse to the claim again recently set up for the prophylactic power of mercurial inunction in hydrophobia. As this claim has been over and over again refuted, we should not have adverted to the subject, but for the valuable incidental matter introduced by the professor into his Report. He observes, that before we can receive the numerous cases which have been published of the preservative power of mercurial salivation, it is necessary—1. That it should be placed beyond all doubt that the animal inflicting the bite was really mad; and that all the persons supposed to have been preserved have really been exposed to the infection. On examining the histories of these cases, however, such proof is quite defective, as in some of those related—e. g., by Ehrmann and Audry, the persons had not been bitten at all, but had merely lain or drank with those who had, or had wiped away their saliva.—2. Next, when persons have been really bitten, and the animal has been really mad, we must be satisfied that the poison has been deposited in the wound. But numbers of the persons referred to have been bitten through their clothes, and every one knows how small a proportion of such acquire hydrophobia, even when no treatment at all has been employed.—3. But even when the poison has been duly deposited in the wound, to admit the preservative power of the mercury, we must allow that all such persons would necessarily suffer from hydrophobia if left to themselves. Numbers of cases contradictory of this are, however, on record. But although all careful observers admit this, the *proportion* of such as escape has never been duly investigated; and the subject being one of the highest interest, M. Renault takes the opportunity of communicating the results of the investigations he has been conducting upon it at Alfort since 1828.

To prevent confusion, he arranges the cases he has collected in two categories. (A.) Cases of dogs or other animals accidentally bitten by others, either mad or supposed to be so, and sent by the police to Al-

fort, to remain under inspection. Of 224 dogs so brought, between 1827 and 1837, which continued under observation for more than two months, without undergoing treatment, 74 or nearly one-third became mad, and 130 or two-thirds exhibited no symptoms. It is evident, however, that these cases do not afford any measure of the activity of the virus; for the dog that caused the bite may not always have been mad, the bites could not always be verified, and the hair of the animal may have prevented the poison from penetrating.

(B.) For this reason, another series of facts is adduced. From 1830 to the present time, certain dogs known as really mad have been made to bite, at the Clinical School, other dogs or herbivora in portions of the surface of delicate structure and devoid of hair, or inoculation has been performed with some of their saliva, collected during the height of the paroxysm. Of 99 dogs, horses, and sheep, so treated, 67 became mad, and 32 continued under observation more than 100 days without any symptom exhibiting itself. Thus, in this category, in which every circumstance favourable to infection was secured, no less than one-third of the animals escaped, without undergoing any treatment whatever.

Examining the experience of other clinical professors, M. Renault says, that Professor Rey, of Lyons, has found that among animals who were accidentally bitten in the streets, and then placed under *surveillance*, 1 to 5 of the dogs, and 1 to 4 of the horses, became mad. Of those bitten or inoculated experimentally, 2 to 3 became mad. Of 16 animals accidentally bitten at Toulouse, 5 became mad. Professor Hertwig, of Berlin, states, that of 137 dogs accidentally bitten, 16 only became mad, 121 remained uninjured; while of 25 experimentally infected 10 became mad, and 15 did not. Thus, in both the categories, the proportion affected was sensibly less in Berlin than in France, whether this be owing to climate or other cause.

Thus, taking things at the worst, it results from these observations, made at different epochs, that two-thirds of the animals accidentally bitten, and one-third of those artificially infected, escape.

Still, it must not be supposed, that these *mean results* of a great number of observations can be applied when speaking of the bite of a particular dog; for M. Renault has repeatedly observed, that while one dog, evidently mad, bites several others, and only one-sixth or

one-seventh of these shall suffer, the virus conveyed from another dog, to all appearance in just the same condition, will infect nearly every animal (five-sixth or six-sevenths).

Moreover, it is generally believed that the bites of *mad wolves* are oftener followed by hydrophobia than are those of dogs. Of 254 examples of such bites, the histories of which M. Renault has been able to collect in authors, in 164, or nearly two-thirds, hydrophobia followed—the proportion for accidental bites by mad dogs being only one-third. Whether this depends upon the fact, that in the wolf the rabies is oftener spontaneous, or upon the more remarkable one, that this animal almost always bites its victim in the face, neck, or head, is uncertain.—*Bull de l' Acad.*, tom. xvii. p. 280.

[Hydrophobia has recently been very prevalent in France, so that something like a panic has been produced, and the journals teem with accounts of supposed remedies. The police have made a terrible onslaught on all wandering dogs ; and the exemption of London from the disease, since the prohibition of the employment of dogs as beasts of burden, has been adverted to. It would be desirable to ascertain how far this exemption has extended beyond the metropolis, where alone the dog-act is in operation. How much remains to be cleared up in the history of *rabies canina*, is seen by a communication from Clot-Bey (*L. Union Med.* 1852, No. 94), in which he states, that while dogs exist in such vast numbers in various parts of Asia and Africa, hydrophobia is of the rarest occurrence. In Egypt, where he lived during twenty-five years, he never heard of a case, although the dogs wander about the towns and villages in vast numbers, under a burning sun, panting for breath, ill-fed, and often deprived of water. He thinks that much may be due to the promiscuous intercourse which their entire liberty allows to these animals. In Greece, on the other hand, the disease is excessively prevalent.]—*Medico Chirurgical Review, October*, 1852.

## SURGERY.

### *On a New Mode of Operating in Varicose Aneurism.* By M. Malgaigne.

The difficulty which usually occurs in operating for this, in securing the two ends of the artery, while the veins are incessantly pouring out

blood, induced M. Malgaigne to try a new plan of procedure, by which opening the sac, or the integuments covering it, might be avoided. The case was an aneurism resulting from venesection, performed ten or twelve weeks before. A small pulsatory tumour existed at the bend of the arm, which caused little inconvenience. The artery was taken up, by means of two separate incisions, just below and just above the tumour, and the cure was rapid and complete, so that when the patient was seen seven months afterwards, no traces of the aneurism could be observed.—*Rev. Med. Chir*, tom, xi. p. 155.

---

*Ligature of the Vertebral Artery, in a case of Gun-shot Wound.* By M. Maisonneuve.

M. Maisonneuve relates a case, which, although it terminated fatally, is of interest on account of the course which the ball took, and the successfully ligature of the vertebral artery. A lady was shot in the neck, and the ball glanced downwards from the side of the cricoid cartilage, and penetrated between the trachea and œsophagus, the great blood-vessels, and nerves, without injuring any of them, until it reached the sixth cervical vertebra, deep into the body of which it became impacted. In its course it fractured the left transverse process, and divided the vertebral artery. The hæmorrhage which occurred at the time of the accident soon stopped, but recurring again violently on the eighth and ninth days, the wound was enlarged in order to search for the vessel. On removing the finger from the hole in the vertebra, whence the ball was extracted, the ends of the bleeding vessel were perceived and secured ; this, from the ease with which the operation was performed, being at the time supposed to be the inferior thyroid. The ligatures came away in 10 days, and all seemed doing well, when the patient, at the end of the third week after the accident, suddenly fell into a state of coma, and soon expired. The two ends of the vertebral artery were found firmly plugged with coagula, but necrosis had affected the vertebra, and an aperture led to a communication with the spinal canal, where there was sero-purulent effusion.—*L'Union Medicale*, No. 34.

---

*On the Treatment of Epistaxis.* By M. Reveille-Parise.

M. Reveille-Parise observes that it is very desirable to be in the possession of a simple means of arresting epistaxis when severe. Plug-

ging is not the simple operation it has been described; it is very tedious, and often excites vomiting or sneezing, which aggravates the bleeding. Moreover, we may not have any appropriate instrument at hand.

He has found three means of great utility:—1. Alcohol, applied upon dossils of charpie, is a most energetic styptic. It causes a strong or even a temporarily painful sensation, and often speedily checks the bleeding. The essential point is, before passing in the alcohol, to dry the nostril well by blowing the nose, and by charpie.—2. Equal parts of powdered gum and alum may be blown into the nares, and dossils rolled in the mixture then applied,—a magma, which arrests the hæmorrhage, being speedily formed. Before removing the dossils, they require to be well moistened with tepid water when the bleeding has quite ceased.—3. The best of all means is, however, the application of carded cotton-wool; and it is surprising that surgeons have hitherto made so little use of this hæmostatic agent. After the nostril is well dried, dossils of pure clean cotton should be passed in, until it is filled. They must not be too thightly rolled, or the blood cannot penetrate the interstices,—nor too closely, or it will do so too easily, and the hæmorrhage will continue.—*Bulletin de Thérapeutique*, tom. xlii. p. 308.

[Other correspondents of the same journal speak also of the great utility of closing the alæ nasi with the fingers, either as the sole or adjuvatory treatment; also of the compression of the carotid on the same side as that on which the bleeding occurs.]

## MIDWIFERY, &c.

### *On the Continuance of Lactation during the Progress of Diseases.* By Dr. Röser.

Dr. Röser states that the results of his observation during thirty-two years, have quite convinced him, that the routine practice of desiring mothers to discontinue suckling, when they become the subjects of serious disease, is erroneous, the ill-effects of the milk upon the infant having been ridiculously exaggerated. He has already called the attention of the profession to this matter, in an essay on typhus, published

ten years since, and all subsequent experience has only confirmed him in his views. He objects to the cessation of suckling for any other cause than local inflammation of the breast, the resolution of which it may prevent, and the cessation of the secretion, which, however, is often due to the neglect in continuing to apply the child : and he cites cases in which the continuance of the child to the breast in apparently hopeless affections, was attended by the best results. He remarks upon the inconsistency in arresting a secretion which is so powerful an agent in abstracting the protein-compound from the blood, while, at the same time, by exciting other excretions, and employing various antiphlogistics, we endeavour to diminish the fibrinous and albuminous elements of the fluid. The effect of suppressing pathological secretions in causing or aggravating disease is admitted, and yet we suppress a normal one, which is exerting an important derivative action on existing disease, and has established the habit, on the part of the system, of requiring such a drain. In the various epidemics of typhus witnessed by Dr. Röser, he has found the continuance of suckling, while the milk remains, of great service in the prevention of bronchitis and pneumonia, which are the usual causes of death ; and in inflammatory diseases, he recommends the practice even when collapse has occurred. Even when a woman is suckling much beyond her time, the child should not be taken from her during an attack of inflammation.

---

*On Unavoidable Uterine Hæmorrhage.* By M. Depaul.

M. Depaul read an elaborate paper upon this subject at the Academie de Medecine, in which he defended at great length the views held by MM. Stoltz and Dubois, upon the tardy development of the lower segment of the uterus. Our space admits only of the notice of some of the more practical parts of the paper. M. Depaul is of opinion that the attachment of the placenta to the lower segment of the uterus is of much greater frequency than those authors admit, who have only noted the cases in which it has been found inserted over the orifice itself ; and he considers Lachapelle's statement, that the majority of cases of uterine hæmorrhage occurring after the sixth month are due to faulty insertion to the placenta, to be correct, when so understood. He does not re-

gard the *diagnosis* of the occurrence by the thickness and softness it imparts to the lower segment of the uterus, as being so easy as stated, when the cervix is long and closed. Nor is the absence of *ballottement* at all conclusive, as he has perceived it in several of these cases. He considers that the hæmorrhage oftener shows itself in the course of the eighth or ninth month, than in the sixth or seventh, as stated by some. Even when the cervix is effaced, and the os opened, experienced persons have sometimes mistaken coagula or excrescences of the cervix, for the placenta. M. Depaul considers that the *prognosis* as regards the mother has been exaggerated, and that with due care the mortality, stated by Simpson at one-third, might be much diminished. It is more serious when the placenta is inserted over, in place of near, the orifice, and in the earlier period, when the cervix is hard and closed. He agrees with Lachapelle, that more than half the children are lost, especially when it is considered that many of those born alive are so before their time, and exhausted by the disturbance of the placental communication.

In the *treatment* of these cases, (1) when the hæmorrhage is slight and the os closed, and no uterine contractions are present, he recommends the employment of the usual general means to arrest hæmorrhage, such as posture, opiates, acidulated drinks, &c. and small hæmostatic doses of ergot. When (2), with the same conditions of the uterus, the hæmorrhage is great and increasing, besides the above means, he advises plugging the vagina. This may act by favouring the coagulation of the blood, and the obliteration of the vessels left open by the detachment of the placenta; and by hastening the advent of labour and the dilatation of the orifice. This last end is not always attained; for cases have occurred in which the plug has been applied for twenty-four or thirty-six hours, with the effect of arresting the hæmorrhage without producing any modification in the cervix. When, in spite of the plug, the bleeding still continues, in part internally, and in part externally, and the woman appears in any danger, we should rupture the membranes; and if such partial emptying of the uterus is not attended with prompt improvement, delivery should be forced, even if multiplied incisions of the cervix uteri are necessary for this purpose. When (3) the hæmorrhage is slight, and has commenced at the full period of pregnancy, or when repeated hæmorrhages have induced premature labour—a certain degree of dilatation being present—if the

loss is very moderate, we may order rest and other general measures, and give ergot to hasten the labour. When the dilatation has become considerable, we should rupture the membranes, especially if the hæmorrhage, without being great, has been of long continuance or frequent repetition, so as to have materially damaged the health. The same course is justified in the interest of the child, the life of which will be risked by its prolonged detention in the uterus after a considerable separation of the placenta. It is in this case that obstetric auscultation becomes so useful; and when this shows the child's life to be in danger, the forceps, or version, should be had recourse to, even when the dilatation is not so great as in other cases would be deemed desirable. When (4) the os is more or less dilated, and the hæmorrhage too serious to admit of temporizing, if the membranes are still intact, the dilatation not being quite complete, these should be ruptured, and the ergot given in preference to using a plug. M. Depaul has, however, the greatest objection to perforate the placenta itself, at the risk of inflicting injury on some vessel that might prove fatal to the child. Even in central insertion, whenever possible, he detaches an edge of the organ to get at the membranes. In central insertion, too, he would employ the plug as a dilator. On account of the danger the child incurs, he likewise objects to Simpson's plan of prior detachment of the placenta. When, in spite of the discharge of the waters, the hæmorrhage continues, or the child's life is found to be endangered, we must deliver; and in these cases, the somewhat forcing delivery is preferrable to the employment of the plug, lest even a moderate amount of uterine hæmorrhage prove too much for the exhausted powers of the woman, or a too long delay prove fatal to the child.

It is an error to suppose that the woman is always safe when delivery has been accomplished; for she sometimes sinks from subsequent hæmorrhage. This occurrence is explained by the special vascular distribution at the lower segment of the uterus, and the less disposition this part has to contract. To secure due contraction, the ergot is the best means; and perhaps it should always be given in these cases immediately after delivery.—*Bull. de l' Academie*, vol. xviii. pp. 849—874.

## MATERIA MEDICA AND THERAPEUTICS.

### *On Calomel and Soda as a Cathartic.* By Dr. Hunt.

Dr. Hunt draws attention in this paper to the remarkable increase of purgative power which calomel acquires by the addition of bicarbonate of soda. So small a dose as two grains, combined with from ten to twenty of soda, acts most efficiently, without inducing the griping stools which calomel does when given alone. After the bowels and liver have been well acted upon, the medicine loses its power, and should be discontinued. Dr. Hunt believes that the soda exerts some power in preventing the mercury acting upon the gums.—*Boston Journal*, vol. xlvi. p. 161.

### *On the General Action of Tartar Emetic, as produced by its Local Application.* By M. Duparcque.

The publication of M. Guerin's remarks upon this subject, adverted to in No. XVIII. has induced M. Duparcque to recal attention to views which he long since laid before the profession, concerning the refractory state of the skin to the operation of tartar emetic and other counter-irritants. He does not allude to the influence of idiosyncrasy, under the influence of which the skin may manifest either abnormal sensitiveness or insensibility; but to a temporary and *acquired* insensibility, dependent upon the presence of certain morbid conditions, especially acute phlegmasiæ and fever. During the existence of such insensibility, the power of *absorption* is still retained; for while blisters under these circumstances will not raise the skin, they will still influence the urinary organs. Soon after the introduction of the Rasorian mode of administering antimony into France, M. Duparcque discovered that, during the prevalence of fever and phlegmasia, while no pustular eruption was producible on the skin by the tartar-emetic ointment, the antimony was absorbed, and acted medicinally, as if it had been taken into the stomach. Indeed, as the large doses ordered by Rasori are not always tolerated, his plan could not be carried-out in the treatment of inflammation of the brain and digestive organs; while the local application of the substance admits of its operation being extended to these. As soon, however, as the pathological con-

dition which prevented the cutaneous irritation from taking place is relieved, and the vital activity concentrated on the internal organs becomes decentralized, an effort being made of the re-establishment of the functional activity of the entire economy, the skin recovers its normal irritability. Parts which had long remained unaffected by sinapisms, now inflame or suppurate, or renewed applications of stimuli produce effects which they were not able to do before.

M. Guerin has also shown that this insusceptibility may not only be induced by affections occasioning a general perturbation of the economy, and having no immediate connexion with the portion of skin to which the ointment is applied—but likewise by a morbid peculiarity of the skin itself, transmitted to it from subjacent organs.

Another fact, upon which M. Duparcque lays stress, is the *impregnation of the tissues by the tolerated substances* with which they are brought into contact. Thus parts to which blisters &c. have been applied during the existence of inflammation with little or no effect, may become the seats of ulceration or mortification when this subsides. Those parts do not participate in the returning vitality of other portions of the periphery, such vitality having become extinguished by the imbibed substance. This disposition may be strengthened or favoured by certain circumstances, such as the intensity or severity of the disease, the degree of intensity of action exerted by the substance employed, and especially the duration of the application without determining irritation. For this last reason we should always limit the duration of the application of blisters to children, whether any local irritation be excited or not. Other circumstances influencing the production of this effect are, sex, constitution, and age; women, and particularly children, being most liable to its occurrence. So, too, it is most likely to follow when debilitating treatment has been employed, as bleeding, and especially the administration of calomel.—*Bull. de Therap.*, tom. xlii. pp. 49—58.

---

### *On the Action of Iodine.* By M. Bonnet.

M. Bonnet has recently published two interesting papers on the action of Iodine. In the first of these, he shows that iodine, when applied locally to ulcers or blistered surfaces, or injected into the cavities

of abscesses and serous membranes, becomes largely absorbed and excreted, being speedily detected in the urine and saliva. It may in this way be excreted by the urine to the extent of fifteen grains per diem, without in any way acting injuriously on the general health; and to be therapeutically useful, such elimination must be continued for six or eight weeks, as shown by the dark-blue colour produced in the urine by starch and chlorine without preliminary evaporation. In this way scrofulous ophthalmia may be effectually cured by dressing a blistered surface, remote from the eyes, without the employment of any internal or local medication. The best of all the preparations for this mode of employment, is an ointment composed of iodine one part, iodide of potassium two parts, and lard thirty parts.

In his other paper, M. Bonnet enters upon the consideration of the mode of action of iodine. He considers that it only operates beneficially in proportion to the amount of eliminatory action it gives rise to, in which respect it surpasses most other substances; or at all events, our chemical re-agents enable us better to trace its operation. In the diseases in which the iodine proves useful, there is also morbid material to eliminate, and by catalytic action the economy is enabled to effect this by the eliminatory effort excited by the iodine. The greater activity of elimination is followed by a greater activity in the renovation of organic material. In consonance with this view, M. Bonnet observes,—1. If we are desirous of acting energetically on the economy by means of iodine, we must maintain this active twofold power of absorption and elimination. The patients in whom he has found its use to be especially attended by increase of appetite and strength, are those suffering from large ulcers, in whom the tests exhibited the free excretion of the iodine by the urine; while after each dressing of the ulcer with it, a temporary feeling of febrile heat of the skin was induced.—2. The employment of the medicine should be associated with good hygienic measures, which render the organic renovation more active, and with such remedies as favour elimination. Thus, exercise, free exposure to the air, purgatives, and diaphoretics, second the effects of the iodine, as it in turn augments the influence of these agents.—3. Iodine is no specific, and might be replaced by any substance which can easily penetrate into the economy, and of which the latter can easily rid itself again. Among such are sulphureous and terebinthine preparations, whose excretion is demonstrable, and pro-

bably the salts of mineral waters, which, however, our means are unable to detect in the excretions. However this may be, the most varied substances produce effects in common with iodine; and it is this common character of their mode of action which explains how they may be substituted for each other, when the power of exciting eliminatory action becomes enfeebled in either of them.—4. Notwithstanding this view of the eliminatory action of iodine, M. Bonnet believes the action of the iodides on the blood and fibrine, as shown by the experiments of Dumas and himself, must not be overlooked. When an alkaline iodide penetrates into the blood, it exerts a solvent action. If the fibrinous elements are in their normal fluid state, it may only render them less disposed to coagulate; while if they are coagulated it dissolves them. Such coagulation exists within vessels that are the subject of inflammation, and beyond the vessels when effusion of lymph has taken place into the tissues.—*Gazette Medicale*, Nos. 20, 21, & 22.

## MISCELLANIES.

### NOTES OF DR. VAN SOMEREN'S LECTURES ON NATURAL PHILOSOPHY.

*Reported by Assistant Apothecary* A. Bogg.

#### Mechanics.

1. *Matter and its properties.*—Before entering upon this subject it would be necessary to explain the following technical terms, which will be found continually recurring in the course of these lectures.

An *angle* is made by the opening of two straight lines, and called *right*, *acute*, or *obtuse*; according as the opening is greater or less. When the two lines meet perpendicularly the angle formed by them is termed a *right* angle, and is 90 degrees: when less than a right angle, it is called an *acute* angle, and when larger than a right angle, an *obtuse* angle. A *triangle* is a space or figure containing three angles, and bounded by as many straight lines.

The term *matter* is used to denote any thing that occupies space, or anything that has length, breadth, thickness, and offers some resistance to the touch.

There are certain *general* or inherent properties which appear to be common to all bodies without exception, and are

hence called the *essential* or physical properties, these are *solidity, inertia, mobility and infinite divisibility.*

*A. Solidity.*—This term is used synonymously with *impenetrability,* by virtue of this property two portions of matter cannot occupy the same space at the same time, there might be displacement but not penetration, it is dependent on length, breadth, and thickness. Thus if you put a spoon into a glass-full of water, the water will flow over to make room for the spoon. When a nail is driven into a wall, the nail penetrates *between* the particles of the wall by forcing them to make room for it. If a goblet or basin be pushed into water with the mouth downwards, the entrance of water is resisted for the same reason.

*B. Inertia.*—By virtue of which a body always endeavours to continue in the state of rest or motion in which it may be at any time.

*C. Mobility.*—The property by which all matter is moveable if a force sufficient to move it be applied.

*D. Infinite divisibility.*—By this is meant a susceptibility of being divided into an indefinite number of parts. The smallest portion of any substance perceivable by human eye, is still a mass of many ultimate atoms or particles, which may be separated from each other, or newly arranged, but which, cannot individually be hurt or destroyed. For instance, if a pound of silver (5760 grains) and a single grain of gold be melted together, the gold will be found diffused throughout the silver, insomuch that if one grain of the mass be dissolved in nitric acid the silver will combine with the acid, and the $\frac{1}{5760}$th part of a grain of the gold will be precipitated. Platinum and silver can be drawn into wire much finer than human hair. A grain of blue (green?) vitriol will tinge a gallon of water, so that in every drop the colour may be perceived.*

*Attraction.*—Also a property of matter, and by which is meant the tendency which particles of matter have to unite with one another. There are 4 kinds of attraction viz. cohesion, gravitation, magnetism, and electricity.

*Cohesion.*—Called also the attraction of *aggregation* is that power by which the small particles of matter are made to cohere together, acting at insensible, or very short distances and forming masses. The degree of attraction determines the form and consistence of bodies, as hardness, toughness, &c. &c.

*Illustrations.*—A leaden bullet cut into halves and the fresh surfaces being brought into contact with a slight turning pres-

* Rather doubtful as regards the color, but chemical agents detect in every drop the vitriol.—Ed.

sure, the two pieces will cohere so firmly together, as almost to appear never to have been divided.

Two pieces of perfectly smooth plate glass or marble laid upon each other with a little oil between them so as to fill up the pores, will adhere so strongly as to require no small amount of force to separate them. If two drops of quick-silver be placed at a little distance, they will run into each other and form one large drop.

This attraction is overcome in the fracture of parts, as in the melting of metals, cutting of wood, &c.

*Capillary Attraction.*—Called also molecular attraction is merely a variety of *cohesive* attraction. This term is derived from the Latin word *capillus* signifying *hair*, and is so denominated from the property which tubes of a very small bore, scarcely larger than to admit a hair, have of causing water to stand above its level, the smaller the bore the higher the fluid rises, thus in a tube with a bore of $\frac{1}{8}$ of an inch diameter immersed in water the fluid will rise a quarter of an inch above the level of its surface. Between two plates of glass standing near to each other, the same rising of water will occur, and if they are closer at one perpendicular edge than at the other, the surface of the suspended water will be higher there, so that the liquid will form itself into a curved line. This curve is well known to mathematicians under the name of *hyperbolic*. In making the experiment the water should be coloured, in order to render the effect more obvious.

All porous substances, such as sponge, bread, linen, &c. may be considered as collections of capillary tubes. A piece of sponge or a lump of sugar touching water by its lowest corner, soon becomes moistened throughout. The wick of a lamp is also thus fed by the oil in which it is immersed.

*Repulsion.*—Counteracts the force of the attraction, and prevents the atoms of all bodies from meeting in absolute contact, even when they appear to the human eye so to do. Were it not for this, things would be constantly approaching so closely to each other, that they would stick together, in a way to disturb the common operations of nature and art.

The following facts illustrate the power of repulsion the drops of dew which appear in a morning on plants, assume a globular form, and roll over without leaving the least trace behind. The repelling force between oil and water is so great that they cannot be mixed together. If a ball of light wood be immersed in oil, and then thrown into water, the water will recede so as to form a sort of channel around the ball. Flies

walk upon water without wetting their feet probably owing to their being charged with some unctuous or oily matter.

The repelling force of the particles of a fluid is but small; therefore, if a fluid be divided, it easily unites again. But if a glass or any hard substance be broken, the parts cannot be made to cohere without being first moistened, because the repulsion is too great to admit of a re-union.

There is another property which some bodies possess viz. that of being bent without breaking, and as soon as the force upon them ceases to act, they recover their original position. This is called *elasticity*, and is explained thus:—the particles of those bodies, though disturbed, are not drawn out of each others attraction. This property is evident in a ball of wool or cotton, or in sponge compressed, also in a piece of thin steel or Cane, Indian rubber and many other things. Of all bodies, those in the form of *air* or gas are the most eminent for this property. Hard bodies are in the next degree elastic.

*Attraction of Gravitation.*—Is that power by which all bodies whether near or distant tend towards one another, they also have a tendency to the earth, and unless supported will fall in lines perpendicular to its surface. We see perpetual instances of this: for example, a loose brick falls from the top of a house, or an apple from its tree. Logs of wood floating in a pond approach each other, and afterwards remain in contact.

And steam, smoke, &c. at first sight appear to be exceptions to the general rule, but they are not; they ascend because they are lighter than the atmosphere which surrounds them, and the moment they reach that part of it which has the same gravity with themselves they cease to rise.

It is this tendency to *gravitate* that gives *weight* to bodies. The *weight* of a body therefore implies, the measure of the effort which is necessary to keep a body from falling.

This attraction of gravitation affects bodies with a force proportioned to the quantity of matter they contain; therefore all bodies at equal distance from the earth fall with equal velocity.

A bullet and a feather will not fall to the ground in the same space of time, and this apparent contradiction may be accounted for in this way, the feather in proportion to its weight, meets with much greater resistance from the air, than the bullet, owing to the increased or extended surface of the former, but in *vacuo* both will fall simultaneously. The same applies to a piece of wood and a piece of metal when thrown into water. The metal being nine times heavier than its own bulk of water sinks into it, because the water does not resist its descent, as it does that of the wood which is lighter than water.

*Momentum.*—Is the force or power acquired by a body in motion, and is estimated by multiplying its weight by its velocity.

If we place a cannon ball gently on one of our feet we would feel no pain from it, but if we let it fall from a height great damage would be done, in the same manner, we may place a pound weight upon a China plate without any danger of a fracture, but if it be allowed to fall from the height of only a few inches, it will dash the plate to pieces. In these two cases the foot and plate had but the weight of the ball and the pound weight to sustain; but when thrown from a height they had the weight multiplied by the velocity that the bodies acquired during the fall. Place a piece of wood on an inclined plane and if a ball lean against it, it will not fall; but if the latter be taken up a few inches and suffered to roll down the inclined plane against the wood, the latter is thrown down, in the former case the piece of wood would only have to resist the weight of the ball, in the latter it has to resist the weight multiplied into its motion, or velocity. Hence the momentum of a small body whose velocity is very great, may be equal to that of a large body with a slow velocity.

For this reason cannon balls have in modern warfare superseded the battering rams used by the ancients. A Cannon ball weighing 28 lbs and travelling at the rate of 1072 feet per second is equal to the momentum of a battering ram weighing 15,000 lbs with a velocity of 2 feet per second.

It has been already observed that by the great law of gravitation, the attraction of all bodies is proportioned to the quantity of matter which they contain. Now the earth consisting of a much greater quantity of matter than any body upon its surface, the force of its attraction must necessarily be pre-eminent, and must draw every thing towards itself. If two balls are let fall from a high tower at a small distance a-part, though they have an attraction for one another, yet it will be as nothing when compared with the attraction by which they are both drawn to the earth, and consequently the tendency which they mutually have of approaching one another will not be perceived in the fall. If, however, any two bodies of equal weight were placed in free space, and out of the sphere of the earth's attraction, they would assuredly approach each other, and meet in the middle point between both, but if they were unequal, they would then meet as much nearer the larger one, as that contained a greater quantity of matter than the other.

The attraction of gravitation, like every power which proceeds from a centre, is greater the nearer the bodies are to each other, as the light of a taper is more intense near to it than at a

distance. The loss of attraction by distance is in technical language thus expressed, "the power decreases as the squares of the distance increase." Thus, if we receive a certain quantity of light from a candle at 1 foot, we shall on removing to the distance of 3 feet get $3 \times 3 = 9$ times less light than we had before, 9 being the square of 3. The same is applicable to the heat imparted by a fire, attraction at 2 feet distant is 4 times less than at 1 foot, the distance being increased only two-fold; but the attraction is diminished four-fold, 4 being the square of 2.

Now the cause of the attraction of gravitation is unknown, and we only know it by its effects. It acts from the *centre* of the earth, and not from its surface, and hence the difference of the power of gravity cannot be discerned at the small distances to which we can have access.

The distance of the *centre* from the surface of the earth is 4000 miles, and could we ascend as many miles up in the air and thus be double the distance we now are from the centre, we should then find that the attractive force would be but one-fourth of what it is here, so that a body, weighing 16 pounds, would at 4000 miles above the earth weigh but 4 pounds.

The fall of water down hill is in obedience to this law of gravitation.

The force of gravity or general attraction is such, that a body falls 16 feet in a second, if not far above the earth's surface; a velocity which, remaining uniform, would carry it, without further action of gravity, through 32 feet in the next second, and so on: but from a great height, as a mile, this would be the rate of its velocity in the *first* second only, because the attraction of gravitation acting continually increases the velocity, thus a fall of 16 feet in the 1st second will become one of 64 feet in the next, the *accelerated velocity being* 48 feet. In the 3d second it will be 80 feet, and so on, the velocity increasing according to the odd numbers 1, 3, 5, 7, 9, 11 &c. multiplied, into the space travelled over in the first second. Knowing this progress, the velocity acquired by a falling body, and the distance through which it falls, in any given time, are easily ascertained; and the height of a precipice, or the depth of a well, may be judged of with considerable accuracy, by marking the time required for a body to fall through the space. Thus if a bullet or other heavy body were dropt down a well, and that it was exactly 5 seconds in the descent, it would fall 16 feet in the first second in the next $3+16=48$, and so on till you get the product of the 5th second which is 144 feet, or $9+16$. By adding all the products together, the sum will be 400 feet, which would be the depth of the well, but this may be ascer-

tained by a much shorter rule, which is "the spaces described by a body falling freely from a state of rest increase as the *squares* of the times increase," consequently you have to square the number of seconds, and then multiply that again by 16 feet the space it described in the first second, and you have the required answer: but the velocities do not increase in the same ratio.

*Centre of Gravity.*—"That point of a body in which its whole weight is as it were concentrated, and upon which, if freely suspended, it will rest and in all other positions it will endeavour to descend to the lowest place to which it can get." All bodies of whatever shape must have a centre of gravity.

*Line of Direction.*—An imaginary line which passes from the centre of gravity of a body in a direction towards the centre of the earth. If the line of direction fall within the base of the body it will stand, if not, the body will fall. Thus, it sometimes happens with an over-loaded cart drawn up a steep hill that if one side of the road is so much higher than the other the line of direction is thrown beyond the base, and the cart is upset. When a boat is in any risk of being upset, it is dangerous for the passengers to rise suddenly for thus their centre of gravity is raised and by the line of direction being thrown out of the base, the centre of gravity is unsupported and the boat topples over. When a man stands upright, the centre of gravity is supported by his feet; if he lean on one side he will no longer stand firm but he soon recovers his balance by stretching out the opposite arm. It is by attending to this that a rope dancer performs all his feats of agility—whenever he finds himself in danger of losing his balance, he shifts the heavy pole, which he holds in his hands, in order to throw the weight towards the side that is deficient and thus support his centre of gravity. A woman far advanced with child throws herself back while standing or walking, in order to counterbalance the preponderance in front, and thus maintain her centre of gravity, the same is the case with a man with a large belly.

The reason that children fall so frequently is that they *cannot* support their centre of gravity.

The nearer the *centre of gravity* lies to the base the more securely the body stands: hence conical bodies stand firmly, and if the line of direction falls in the middle of the base the body stands still more firmly. On the contrary, the narrower the base, and nearer the line of direction is to the side of it, the more easily may the body be overthrown, a less change of position being sufficient to remove the *line of direction* out of the base in the latter case than in the former: all bodies fall differently over an inclined plane according to their shape.

In all spherical bodies the base is but a point, the line of direction is easily thrown beyond it, and the centre of gravity is therefore unsupported, hence the reason why a ball is so easily rolled down a slope, the smallest force being sufficient to remove the line of direction out of its base. (The centre of gravity in this case coincides with the centre of magnitude.) Hence it is evident that heavy bodies situated on an inclined plane will, while the line of direction falls within the base, slide down upon the plane, but they will roll when that line falls without the base. Hexagonal bodies too will roll down a slope, but they will not do so with such facility as spherical bodies. A square body would require a still greater force to overthrow it, if a small force were used the body would *slide* down the plane instead of rolling. There are some buildings which lean very much out of a straight line and yet do not fall.

The leaning tower of Pisa, a town in Italy, leans 15 feet out of the perpendicular. Strangers tremble to pass by it, still it is found by experiment that the line of direction falls within the base, and therefore it will stand while its materials hold together.

There are many rules for finding the centre of gravity in different kinds of bodies, but the following is the simplest. If a piece of plank be freely suspended from any point and a plumb-line be attached at the same point it will pass through the centre of gravity, mark the line with chalk, then hang the board up by any other point, and if another chalk line be made in the same manner, the place where the two lines cross or cut each other, will indicate the centre of gravity and the board, when supported by a cord attached there, will hang evenly balanced.

When the centre of gravity is not supported it will always descend to the lowest point it can find.

The following cases altho' paradoxical, are interesting proofs of this property.

If a double cone be placed upon the edges of two straight smooth rulers, which at one end meet in an angle, and rest on a horizontal plane, and at the other are raised a little above the plane the body will roll towards the elevated end of the rulers and appear to ascend, the parts of the cone that rest on the rulers getting smaller as they go over a large opening, and thus letting it down, the centre of gravity descends. But it must be remembered that the height of the planes must be less than the radius of the base of the cones. It is upon this principle that a cylinder is made to roll up hill. If a cylinder of wood or paste-board be placed on a slope or inclined plane, it will na-

turally descend, because its centre of gravity it thereby approaching the earth but if there be a heavy mass of lead introduced at one side, it will roll up the inclined plane, till the lead gets near the base, where it will lie still because the centre of gravity, by means of the lead, is removed towards the plug and therefore is descending, though the cylinder is ascending.

The various toys which are put into the hands of children, such as the little sawyer, rope dancer, tumbler, &c. are very good illustrations of the principle of the centre of gravity.

When two bodies are fastened together by a rod, or any other power, they are to be considered as forming but one body. If the two bodies be of equal weight the centre of gravity will be in the centre of the line which unites them but if one be heavier than the other, the centre of gravity will be proportionably nearer the heavy body than the light one.

LAWS OF MOTION.

Motion consists in a change of place of a body, or parts of a body, from one place to another, it is the contrary of remaining at rest and the power which puts a body into motion is called *force*.

As the science of mechanics is founded upon the laws of motion, it will be necessary to explain these laws before examining the mechanical powers.

There are 3 general laws of motion.

1st. " That every body will continue in its state of rest, or of uniform motion, until it is compelled by some force to change its state." This constitutes what is called the *inertia* of bodies. We know that it requires force to put a body which is at rest in motion, an exertion of strength is also requisite to stop a body which is already in motion, or in other words there must be some force to *cause* as well as some to *arrest* motion, thus if you place a basin of water in a waggon, and when the water is perfectly still, move the waggon, the water resisting the motion of the vessel will rise in the direction contrary to that in which the vessel moves, again, if you stop suddenly, the water while endeavouring to continue the state of motion will rise upon the opposite side. Horses must make a greater effort at first to put a carriage into motion, than to maintain the motion afterwards, and a strong effort is required to stop a moving carriage.

In riding if your horse darts off suddenly you may be left behind, or may be thrown off on one side by the horse starting to the other.

All motion is naturally *rectitineal* motion, therefore a ball shot from a cannon would for ever continue in a right line (in the

same direction it received at first) if not diverted from its course by some other power.

When we observe the path of a falling body *bent*, it is dependent on two forces, and as soon as the second force is in abeyance the body resumes the straight line at a tangent. For instance if you whirl a stone round in a sling, there are 2 forces which act upon the stone—there is the force by which if you let go the string, the stone will fly off in a right line this is called the *centrifugal* or *centri-fleeing* force and there is the force of the hand which keeps it in a circular motion, which is called the *centripetal*, or *centri-seeking* force. The former is also called the tangential or projectile force. The moon and all the planets are governed by this law.

From what has been said, it is seen that a body at rest would never move if force were not applied and that a body put into motion retains motion, after the force has ceased.

There are however great differences in the duration of motion, and the differences are always exactly proportioned to evident causes of retardation ; The force which compels a body in motion so stop his three-fold—1st the attraction of gravitation, 2d resistance of the air—and third, the resistance it meets with from friction but chiefly the first.

A bullet or arrow, projected horizontally, is gradually drawn downwards by the attraction of the earth, but it deviates neither to the right hand nor to the left.

Two little wind-mill wheels, set in motion together with equal velocity, but of which one has the flat sides of the vanes turned to their course, and the other the edges, if moving in the air, will stop at very different times, but if tried in a vessel from which the air has been removed, they will stop exactly together.

A smooth ball rolled on the grass soon stops on a green cloth over a smooth plank, it travels longer on the bare planks longer still, on a smooth and level sheet of ice, it hardly suffers any retardation from friction, and if the air be moving with it, will reach a great distance.

*2nd Law.*—" The change of motion is proportioned to the force impressed, and in the direction of that force." For instance, if while a cricket ball after being struck, is rolling along, it is struck again, it goes on with increased velocity, and that in proportion to the strength which is exerted on the occasion, whereas, if, while it is rolling, it be struck back again, or receive a side blow, the direction of its course will be changed. A bullet issues from the mouth of a cannon, in the direction of the axis of the cannon, which is, as the force impels it, but being acted on by gravity and the resistance of

the atmosphere the direction of its course is changed, the ball falls to the ground, and goes on to a greater or less distance, in proportion to the quantity of powder used.

By this second law it will be seen, that if a moving body receives an impulse in the direction of its motion, its velocity will be increased, if in the contrary direction, its velocity will be diminished, but if the force be impressed in a direction, oblique to that in which it moves, then its direction will be between that of its former motion, and that of the new force impressed.

When two or more forces act upon a body at the same time, but whose directions do not coincide, it will by their joint action be made to move in a middle course between the directions of the separate forces, and thus describe the diagonal of a square, or parallelogram.

For instance, a ship moving south by a direct wind, may at the same time, be carried east, just as fast, by a tide or current moving east, every instant, therefore it will go a little south and a little east, and really will describe a middle line pointing south-east which will be the diagonal of a square.

If on a billiard ball two forces be simultaneously impressed, but if one of the forces be greater than the other, the ball will describe the diagonal of a parallelogram.

If two forces act upon a body in such a manner as to move it uniformly, the diagonal described will be a *straight* line but if one of the forces acts in such a manner as to make the body move faster and faster, the line described will be a *curve.* A shot fired from a cannon, for instance, is acted on by no less than three forces, the force of projection first given to it, the resistance of the air, through which it passes and the force of gravity which finally brings it to the ground. Since these two latter forces are constantly acting, and that of gravity being an accelerating force also, the shot will be drawn sooner to the ground, and in a *curve* instead of a straight line.

From these facts we may deduce the following corollaries.

1st. If the forces be equal, and act at right angles to one another, the line described by the body acted upon, will be the diagonal of a square.

2dly. By varying the angles we vary the form of the parallelogram.

3dly. The motions of two forces acting this way conjointly, are not so great as when acting separately. Hence in the *composition,* or *adding* together of forces, motion is always *lost;* and in the *resolution* or the *dividing* of any force, motion is gained.

*3rd Law.*—"To every action of one body upon another, there

is an equal and contrary re-action." If you strike the table with your hand, you communicate to it the motion of your hand, and the table re-acts against the hand, just as much as the hand acts against the table.

If you press with your finger, one scale of a balance, to keep it in equilibrio with a pound weight in the other scale, you will perceive that the scale pressed by the finger acts against it with a force equal to a pound, with which the other scale endeavours to descend. In all cases, the quantity of motion gained by one body is always equal to that lost by the other in the same direction. Thus, if a ball in motion strike another at rest, the motion communicated to the latter will be taken from the former, and the velocity of the former will be proportionally diminished.

If a person in a boat, by means of a rope, attempt to draw another boat towards him, the boat in which he is would be as much pulled toward the empty boat as that would be moved to his, and if the weights of the two boats were equal, they would meet midway between the two.

If you strike a glass bottle with an iron hammer, the blow will be received by the hammer and the glass, and it is immaterial whether the hammer be moved against the bottle at rest, or the bottle be moved against the hammer at rest, yet the bottle will be broken, and the hammer is not injured, because the same blow which is sufficient to break glass is not sufficient to break or injure a piece of iron.

From this law of motion we may learn in what manner a bird by the stroke of its wings, is able to support the weight of its body. If the force with which it strikes the air below it, is *equal* to the weight of its body, then the re-action of the air upwards is likewise equal to it ; and the bird being acted upon by two *equal* forces in contrary directions, will rest between them. If the force of the stroke is *greater* than its weight, the bird will rise with the *difference* of these two forces and if the stroke be *less* than its weight, then it will sink with the *difference*. The same takes place with a swimmer.

But the most striking experiments on this subject are made with *elastic* and *non-elastic* bodies. The former have a certain spring or power of self-recovery by which their parts upon being pressed inwards, by percussion, return to their former state. The latter are those which when one strikes another, do not rebound but move together after the stroke.

If two ivory balls, say A and B, be suspended by threads, if A be drawn a little out of the perpendicular and let fall upon

B, it will lose its motion by communicating it to B, which will be driven to a distance equal to that through which A fell, in the opposite direction and hence it appears that the re-action of B was equal to the action of A upon it and the parts of the balls at which they touch will be flattened, but no mark will be perceptible, their elasticity destroying all trace of it. If instead of ivory, two equal soft balls, of clay or wax which are non-elastic, meet each other with equal velocities, they would stop and stick together at the place of their meeting as their mutual actions destroy each other.

If you hang any number of balls as 6, 8 &c. so as to touch each other, and if you draw the outside one away to a little distance and then let it fall upon the others, the ball upon the opposite side will be driven off, while the rest remain stationary, so equally is the action and re-action of the balls divided among them. In the same manner, if *two* are drawn aside and suffered to fall on the rest, the *opposite two* will fly off, and the others remain stationary.

There is one other experiment illustrating well the action and re-action of bodies, and also the "*vis inertia*" of matter, worth mentioning. If you strike a black-smith's anvil with a hammer, action and re-action being equal, the anvil strikes the hammer as forcibly as the hammer strikes the anvil. If the anvil be large enough, you might lay it on your breast, and suffer it to be struck with great force without pain or risk, for the *vis inertia* of the anvil resists the force of the blow but if the anvil were but a pound or two in weight, the blow would probably kill.

## ON THE MECHANICAL POWERS.

The mechanical powers are six in number, one or more of which enters into the composition of every machine, they are the *lever, wheel and axis, pulley, inclined plane, wedge,* and the *screw.* They are called mechanical powers, because by their means we are enabled to raise weights, move heavy bodies, and overcome resistances, which without their assistance cannot be done. Thus by machinery we can raise 1000 lbs., while unassisted we may only lift a tenth part, viz. 100 lbs. but it must be remarked "that what we gain in power we lose in time," the weight of 1000 lbs. we individually cannot lift in less than 10 times the time occupied in lifting 100 lbs. so we increase our power ten-fold at the expense of time, and can with one continued effort in, say, ten minutes do what we could have done in ten separate efforts in the same time. Thus we find that though there be not any actual increase of force gained by these

powers, yet the advantages which men derive from them are inestimable. For instance. If there are several small weights, manageable by human strength, to be raised to a certain height, it may be just as convenient to elevate them one by one, as to take advantage of the mechanical powers, in raising them all at once, because the same time will be necessary in both cases. There is however this advantage to be derived from the mechanical powers. Suppose you have a large block of stone or an immense log of wood to carry away, the division of which into pieces would not suit your purpose, the mechanical powers would be called into requisition, and no very great exertion will be necessary to lift such heavy weights.

I. *Lever.*—A lever is any inflexible bar of wood or iron, or any hard substance, supported at a point by *prop* which is called the *fulcrum*, and on which as a *centre* of *motion* all the other parts turn. It serves to raise weights to small heights, and also to loosen largest stones. The two parts of a lever divided by a fulcrum are called its *arms*. There are three kinds of levers. In the *first*, the *fulcrum* is between the *weight* and the *power* and nearer the weight than the power, thus when a man turns up earth with a spade the *fulcrum* is the part of the spade which rests on the ground the *power* is applied at the handle of the spade, and the *weight* to be moved is the earth at the lower end of the spade. A poker, and the common steel yard are levers of this kind. A pair of scissors, snuffers and most kinds of pincers, are instruments composed of two levers united in one common fulcrum. We find that with this lever the power requisite to raise a certain weight, diminishes as the distance of the power from the fulcrum increases, but the distance travelled by the power increases in the same proportion. For example, if we take a lever with the short arm equal in weight to the long arm, a weight of 12 ounces at the extremity of the short arm will be counterpoised by a weight of one ounce at a point in the long arm which is 12 times the distance of the 12 ounce weight from the fulcrum, this is the principle of the *steel-yard.* One pound in the long arm will balance a similar weight in the short one, if placed at the same distance from the fulcrum, at double the distance it will counterpoise 2 pounds, at treble 3 lbs. and so on, or in other words if we *multiply the weight by its distance from the fulcrum, then multiply the power by its distance from the fulcrum, and if the products are equal, the weight and power will balance each other.*

In levers of the *second* kind, the *weight*, instead of being at one end, is situated between the *power* and the *fulcrum*, and the *power* being further from the fulcrum than the weight is.

The advantage gained in this lever, is as the distance of the power from the fulcrum, to the distance of the weight from the fulcrum, and the velocity increases in the same ratio, in other words, by how much the power is more distant than the weight from the fulcrum, by so much is the power greater. Thus, a weight of 5 ounces at a certain distance from the prop will be balanced by one of 1 ounce at 5 times that distance from the prop, and this will travel 5 times as quick, and 5 times the distance that *that* will. The following are examples of levers of the second sort, every door which turns on hinges, in this instance, the *hinges* represent the *fulcrum*, the *hand* the *power* applied to the other end of the lever, and the *door* is the *weight* which occupies the whole of the space between the power and the fulcrum. Nut crackers, a common wheel barrow. The oar of a boat is a lever of this kind, although the fulcrum is the unstable water ; 2 men carrying a load between them on a pole, share it equally, if it be in the *middle* between them, each man becoming a fulcrum to the lever, as regards the other, but if it be nearer to one end, he to whom it is nearest bears proportionally more of its weight, and consequently becomes the prop.

In levers of the *third* kind the *power* is between the *weight* and the *fulcrum* the power being nearer the fulcrum than the weight. Thus the fulcrum, the weight, and the power, each in its turn occupies some part of the lever between its extremities. But this third kind of lever is least advantageous of all the levers, the weight being farther from the centre of motion than the power, must pass through more space than it ; consequently the power to balance the weight must exceed in intensity the latter, as much as the distance of the weight exceeds the distance of the power from the fulcrum, so that the situation of the power remaining the same, the further the weight the greater must the power be in direct proportion. For instance, a weight of one pound at 3 feet distance from the fulcrum will require a weight of 3 lbs. to balance it at 1 foot from the prop, thus it is seen that the *power* in this case acts with disadvantage, but this disadvantage is compensated by the advantage in the velocity with which a small power will cause the extreme point of the long arm of the lever to move over a great space. Levers of this description are used when the object is to produce great velocity. The aim of mechanics in general, is to gain force, by exchanging it for time, but it is sometimes desirable to produce great velocity by an expenditure of force, a man in raising a long ladder perpendicularly against the wall, cannot place his hands on the upper part of the ladder, the

former, therefore, is necessarily placed nearer the fulcrum than the weight, for the hands are the power, the ground the fulcrum, and the ladder the weight, which, as in the case of a door, may be considered as collected in the centre of gravity of the ladder, about half way up, and consequently beyond the point where the hands are applied. The common fire-tongs is also an example of this lever. But the most important application of this third kind of lever is manifest in the structure of the limbs of animals, particularly in those of man—to take the arm as an instance, when we lift a weight by the hand, it is effected by means of muscles coming from the shoulder blade, and terminating about one-tenth as far below the elbow as the hand is; now the elbow being the centre of motion round which the lower part of the arm turns, according to the principle just laid down, the muscles must exert a force ten times as great as the weight that is raised, at first view this may appear a disadvantage, but what is lost in power is gained in velocity, and thus the human hand is better adapted to the various functions it has to perform.

Having learnt the power of the lever, we may now perceive how the principle of *momentum* before adverted to, is applicable to it. The momentum of a body is estimated by its weight multiplied into its velocity, and the velocity must be calculated by the space passed through in a given time. Now, if we examine the lever and consider it as an inflexible bar turning on a centre of motion, it is evident that the same time is used for the motion both of the weight and the power, but the spaces passed over are very different, that which the power passes through being as much greater than that passed by the weight, as the length of the distance of the power from the prop is greater than the distance of the weight from the prop, and the velocities being as the spaces passed in the same time, must be greater in the same proportion. Consequently, the velocity of the power multiplied into its weight, will be equal to the smaller velocity of the weight multiplied into its weight, and thus their momenta being equal, they will balance one another. This applies to the *first* and *second* kind of lever. In the *third*, the velocity of the power being less than that of the weight, it is evident, in order that their momenta may be equal, that the power must be as much greater than that of the weight, as the length of the distance of the *weight* from the prop exceeds the distance of the *power* from the prop and then they will be in equilibrio.

II. *The Wheel and Axis.* This gives advantage as the circumference of the *wheel exceeds* that of the *axis*. In order to

find that circumference of a wheel or circle, the radius being given you must multiply it by 6. If the proportions were as four to one, one pound hanging from the circumference of the wheel, would balance, four pounds hanging from the opposite side of the axis. This machine may be referred to the principle of the lever. One radius of the axis acts the part of the *shorter* arm, the opposite radius added to that of the *wheel* that of the *longer* arm. The axis is usually a cylinder turning on two pivots, the wheel is fastened to the axis, and has the same centre with the cylinder. The *power* is applied to the *circumference* of the *wheel* and *the weight* is usually fastened to a rope that coils round the cylinder. Sometimes the wheel is only one radius, in which case it is called a *winch* or *crank*. It is by an instrument of this kind that water is drawn from deep wells. Suppose a bucket of water in a well is raised without a wheel to turn the axis, no mechanical assistance is received, the axis in this case being as impotent as a lever whose fulcrum is in the centre but add the wheel to the axis, you will immediately find the bucket is raised with much less difficulty. In most cases only a *single* bucket is raised at once, consequently there requires, but little power in the operation, and instead of a large wheel, an iron handle is made use of, which by its circular motion answers the purpose of a wheel. Where the wells are so deep as to cause, in the ascent, the rope to coil more than once the length of the axis, the difficulty of drawing water, or any other weight increases as it ascends near the top, because the circumference of the axis is thus increased while that of the wheel remains the same, and the advantage gained is as the circumference of the wheel exceeds that of the axis.

By diminishing the axis, or by increasing the length of the handle, advantage is gained, but it is evident that the axis cannot be diminished beyond a certain limit, without rendering it too weak to sustain the weight nor can the handle be managed, if it be constructed on a scale much larger than what is commonly used. It is found preferable, therefore, when a great increase of power is required, to have recourse to the wheel, with spikes standing out of it, or a combination of wheels of moderate size and with teeth on their axis.

If the weight to be raised by a wheel be very great, on suspending the raising power there is a risk of the wheel returning, and to prevent this there is generally fixed at one end of the axis a little wheel, called a *racket wheel*, with a catch, to fall into its teeth, this will, at any time, support the weight in case of an accident. Sometimes *cogs* are set round a wheel on its outer edge for the convenience of turning it, and a small *trundle-wheel* is made to work in the cogs, and to be turned by a *winch*.

The most familiar instances of wheel-work are in clocks and watches also the *capstan* on board of ships, and the common *windlass*.

III. *The Pulley.*—This is a circular and flat piece of wood or metal with a string running in a grove on its circumference, which is enclosed in a form called the *block* and suspended by a central axis, by means of the string a weight may be pulled up, the weight being attached at one extremity, and the power working at the other.

This mechanical power may likewise be explained on the principle of the lever, a *fixed* pulley being analogous to the beam of a pair of scales and offers no advantage, while the *moveable* pulleys are analogous to a lever of unequal arms. In *fixed pulleys*, there is no mechanical advantage derived, for the weight moves just as fast as the power, yet such pulleys are of great use in changing the direction of a power, they are very much used in buildings for drawing up small weights, it being much easier for a man to raise such burthens by means of a single pulley, than to carry them up a long ladder. But a *moveable* pulley affords mechanical assistance. In a single pulley it is evident that a weight (let it be supposed 10lbs) is equally supported by each end of the rope, and that a man holding up one end, only bears half of it or 5lbs; but to raise the weight one foot, he must draw up 2 feet of rope, therefore, with the pulley he lifts 5lbs. 2 feet, where he would have to lift 10lbs. one foot without the pulley.

But the greater number of pulleys connected by a string, the more easily the weight is raised, as the difficulty is divided amongst the number of strings, or rather of parts into which the string is divided by the pulleys, several pulleys thus connected form what is called a *system* of pulleys. In a *system* of pulleys the advantage gained will be always equal to twice the number of pulleys in the moveable or undermost block; but allowance must be made for friction of the cords, and of the pivots or axis, on which the pulleys turn. Systems of pulleys are more portable and often applicable where other engines cannot be. Three things are noticed by writers, which take much from the general advantage and convenience of pulleys as a mechanical power.

1st. The diameters of the axis bear a great proportion to their own diameters.

2ndly. They are apt to rub against one another, and against the sides of the blocks.

3rdly. The stiffness of the rope going over and under them.

IV. *The inclined plane* is a slope or declivity, used to facili-

tate the drawing up of weights. A weight may with much greater ease be drawn up a slope, than it can be raised the same height perpendicularly. But in this as in the other mechanical powers the facility is purchased at the expense of time, the advantage gained is just as much as the length of the plane exceeds its perpendicular height, thus on a plane three times as long as it is high, at one end a weight of 3lbs. will be balanced by one hanging down the perpendicular and a body will roll down such a plane in *thrice* the time it would take to fall perpendicularly the same height, and so of all other quantities and proportions. A flight of steps, a ladder placed against a wall, chisels, hatchets, and all tools chamfered or sloped down to an edge on one side only, may be referred to the principle of the inclined plane.

V. *The Wedge* is composed of two inclined planes joined together at their basis and frequently used to cleave wood, &c. The resistance consists in the cohesive attraction of the wood, or any other body which the wedge is employed to separate, and the advantage gained is in the proportion of half its width to the length of one of its sides. It acts principally by being struck, and not by mere pressure, and the greater the momentum of the blow, the wedge becomes more effective in proportion.

Nails, awls, needles, &c. are examples of the wedge, as are also cutting instruments, knives, razors, the axe, &c.

VI. *The Screw.*—This is much more complicated than the other mechanical powers. It is composed of two parts, the screw and the nut. The *screw* is a cylinder, with a spiral eminence coiled round it, called the thread, the nut or box is perforated to contain the screw, the inside of which has a corresponding spiral furrow fitted to receive the thread, the nut is sometimes called the *female* screw.

The mechanical power is analogous to the inclined plane and lever, now if we cut a slip of paper in the form of an inclined plane, and then wrap it round a cylinder of wood it will be found that it makes a spiral, answering to the spiral part of the screw. Moreover, if we consider the ascent of the screw, it will be evident that it is precisely the ascent of an inclined plane. The *handle* which projects from the nut is the *lever* or *winch*, without which the screw is never used as a mechanical power. Every turn of the screw carries it forward in a fixed nut, or draws a moveable nut along upon it, by exactly the distance between two turns of its thread, the closer the thread of the screw, the more easy is the ascent, but the greater are the number of revolutions the winch must make, so that in this

instance also it will be seen that power is gained at the expense of time.

The power of the screw may be increased by lengthening the lever attached to the nut, or by diminishing the distance of the threads of the screw. The advantage gained is calculated by multiplying the length of the lever (which is the radius of the circle found by its turning round), by 6 (which was mentioned before as the rule to find a circumference), and divide the product by the distance between the threads.

Screws are much used in presses of all kinds, either for the purpose of compression or to raise heavy weights, as in those for expressing oil and juices from vegetable bodies, they are used in the cotton press, printing press, coining machinery, Smith's vice, &c. The *tourniquet* an instrument used for restraining homærrhage, is also an example of the screw. A *common cork screw* is the thread of a screw without the cylinder.

Having finished the examination of the mechanical powers, one more remark must be made relative to them, which is, that *friction* in a considerable degree diminishes their force. Friction is the resistance which bodies meet with in rubbing against each other, and is usually computed to destroy one-third of the power of a machine. There is no such thing as perfect smoothness or evenness in nature, even polished metals do not possess it, when the surfaces of two bodies come into contact the prominent parts of the one will often fall into the hollow parts of the other, and thereby impede motion. Oil or grease is therefore used, it acts as a polish by filling up the cavities of the opposed surface and thus making them slide more easily over each other, hence it is that wheels are greased, and the locks and hinges of doors oiled. There is however generally less friction between two bodies of different substances, than of the same. It is on this account that the spindles of watches are frequently made to work, in jewels and that when two-cog wheels work in one another, the cogs of the one are generally made of *wood*, and of the other of metal, the wheels of carriages are made on the same principle.

There are two kinds of friction, *sliding* and *rolling* the one occasioned by the sliding of the flat surface of a body, the other by the rolling of a circular body. The friction resulting from the former is the greatest, for great force is required to enable the sliding body to overcome the resistance which the unevennesses of the surfaces in contact offers to its motion, and it must be either lifted over, or break through them, whilst in the latter the friction is transferred to a small surface, and the rough parts roll over each other with comparative ease, hence

it is, that wheels are often used for the sole purpose of diminishing the resistance of friction. In descending a steep hill if we fasten one of the wheels, we decrease the velocity of the carriage by increasing the friction, that is to say by converting the rolling friction of one of the wheels into the *dragging* friction, and when castors are put to the legs of a table the dragging is converted into the rolling friction.

The resistance of the *media* in which a machine is worked is also opposed to the motion of bodies and generally proportioned to their density. It is therefore more difficult to work a machine under water than in the air. If a machine could be worked *in vacuo*, and without friction, it would be perfect. A considerable reduction of power must, therefore, be allowed for the resistance of the air.

P. S.—Should this paper meet with acceptance I purpose to draw up the remainder of my notes on the following subjects and will forward them to you as I finish them.

1. Hydrostatics, 2. Pneumatics, 3. Hydraulics, 4. Acoustics, 5. Optics, 6. Magnetism.

[Mr. Bogg will please us under a great obligation by forwarding to our address as early as possible the rest of his notes of Dr. Van Someren's lectures.]

# THE
# MADRAS JOURNAL
OF
# MEDICAL SCIENCE.

## Original Communications.

*Case of Cancrum Oris.* By Assistant Apothecary J. Shortt.

Raunboy, a girl 3 years of age, presented herself for medical treatment on September 19th, 1850. She has a corroding ulcer, occupying the lower lip and angle of the mouth, of a dirty gray color, with black irregularly elevated edges ; the incisor and canine teeth of lower jaw have fallen off ; the maxillary bone is exposed and has a black appearance : face œdematous, pulse weak and thready, tongue foul, skin dry, bowels confined, appetite indifferent. States that the above affection succeeded an attack of small pox, from which disease she suffered a month ago ; the body is pitted slightly, and the patient is weak and emaciated.

To have half an ounce of castor oil immediately ; and a lotion, composed of half a drachm of nitric acid in six ounces of water, which is to be well applied to the ulcerated part, and the whole then covered with a charcoal poultice. *Vesp.*, Dover's powder and powdered rhubarb, of each, one grain, sesqui carbonate of soda two grains, to be made into a powder and given at bed time.

September 20th.—No change in the character of the sore, save that the edges look irritable, pulse and skin as at last report, bowels freely moved.

Sulphate of iron, and di-sulphate of quinine, of each, three grains; tincture of opium, six minims; decoction of cinchona, six ounces;—form a mixture, and let a tea spoonful be given four times a day. Continue the lotion and cataplasm.

September 21st.—The ulcer continues foul, and is extending up to the right cheek and down to the chin, its aspect is irritable, and it bleeds profusely when the jaw is moved, bowels confined.

To have one scruple of Gregory's powder immediately. Solid nitrate of silver to be well applied to the ulcer and repeated daily.

Omit the Lotion.—Continue the cataplasm of charcoal, and tonic mixture.

September 22d—The same as at last report.

Continue the remedies.

September 23d.—Ulcer improved in appearance, and its disposition to spread is arrested, the edges still look irritable, bowels open.

Continue the treatment.

September 24th.—The patient's general health isimproving; ulcer the same as last reported, bowels confined.

To have Gregory's powder, one scruple.

September 28th.—Ulcer looking clean but stationary, bowels regular.

Continue the remedies.

October 1st.—Health improving daily, ulcer clean, except that portion situated at the angle of the mouth, which continues foul. The decayed portion of the inferior maxillary bone is loose; on attempting to remove it, the parts around bled profusely; pulse stronger, skin cool, bowels irregular.

Gregory's powder, one scruple to be given immediately.

Continue the medicine.

October 10th. Ulcer looking clean and healthy, save the small porion noticed in the last report, pulse of tolerable strength, bowels regular, appetite good.

Omit Medicine.

Dilute sulphuric acid, three minims, infusion of calumba half an ounce ; make into a draught, and let it be given three times a day. Apply balsam of peru with lint dressing to the ulcer.

October 15th.—The decayed portion of the inferior maxillary bone came away this morning, ulcer doing well, bowels irregular.

Gregory's powder one scruple to be given immediately.

Continue the medicine and dressings.

October 18th.—A small ulcer has since formed at the inner surface of the upper lip about the size of an anna piece, which was freely touched with nitrate of silver ; the other parts healing, functions natural.

Continue Medicine.

October 20th.—The ulcer last noticed and that of former standing cicatrizing, the patient has improved considerably in flesh and strength, functions natural.

Omit Medicine.

Apply simple dressing to the sore.

October 30th.—The parts are quite healed, but there is a great gap left at the mouth with constant dribbling of the saliva.

Discharged.

*Remarks.*—In this case, the benefits of nitrate of silver are apparent ; it was freely applied daily for a fortnight, it arrested the extent, and improved the appearance of the ulcer materially, the application of it did not increase the patient's sufferings as might have been expected, on the contrary, it appeared to relieve pain by allaying the irritation present.

The progress of this case was at first unfavourable, but it afterwards terminated kindly under the treatment pursued. The deformity left in the situation of the ulcer after it had healed was great, this is of some consequence, especially in a female of caste. The constant dribbling of the saliva was very unpleasant. To remedy this evil, I offered to perform the rheno-plastic or talliacotian operation, which I would have done by making the

skin from the under surface of the lower jaw or the neck and the lip subserve this purpose, so as to fill up the gap left by the ulcer. It was further my intention to restore the lost teeth by substituting artificial ones set in gold or silver, which the patient's friends were in circumstances to afford, but the relatives refused their consent to the proposed measures. It appeared to them absurd or monstrous to cut sound parts of the body for the restoration of lost portions; did they agree, I was confident not only of the feasibility of the operation, but of its success.

---

*On the Preparation of Hydrochlorate of Morphia.* By Assistant Apothecary G. NORTON.

There are several processes given in chemical and pharmaceutical works for the preparation of morphia. That which I employ by preference is the one devised by Mohr, a German chemist, the ingenuity of which consists in the property, that this alkaloid is soluble in an excess of lime, and precipitated from it by the addition of sal-ammoniac. The advantages of this process are, that it is economical, and easy of execution; it requires little or no spirit, and the morphia is in the first instance obtained free from narcotine its usual associate, because this latter substance is not dissolved by excess of lime; the morphia, however, contains a little coloring and resinoid matter, from which it can be freed by resolution in lime, and reprecipitation by sal-ammoniac. The process moreover is productive, and admits of being employed in operating upon small quantities of opium, especially in cases where the quality of this drug requires to be determined.

The *description of the process* with some slight modifications is as follows:—Take *one part* of opium, cut it into small and thin slices, put it into a suitable vessel, and pour over the opium *three parts* of hot water, at the temperature of about 180° or 200° F; digest for three hours, stirring occasionally with a strong wooden spatula; at the end of this time, strain and

press. Repeat the digestion, straining, and pressing, three successive times, employing the same quantity of hot water, and using the portion of opium which remains undissolved on each occasion: a soft mass, little adherent to the fingers, devoid of any bitter taste remains; it consists of caoutchouc and other inert insoluble matters, it is the debris of the opium, which may be cast away. Mix all the strained liquors, and heat in an appropriate vessel, till the temperature rises to 140° or 180° F. Add milk of lime, prepared by mixing *lime*, equal to *one-fourth* part by weight of the opium employed with a sufficient quantity of water, till it acquires the consistence of cream. Stir thoroughly, continue the heat for a few minutes longer, and strain while hot; (this part of the operation is a little tedious, on account of the insoluble meconate of lime which forms clogging the pores of the cloth strainer, and causing the fluid to pass through slowly,) wash what remains on the strainer with some hot water, and press. Evaporate the strained liquor, which is now of a lemon color, at a temperature below that of boiling water, until it is reduced to half its bulk; this part of the operation is better done by water heat. Filter the evaporated liquid, and heat it to 140° F.; then add *sal-ammoniac* in fine powder, in the proportion of *one ounce* to *one pound* of opium used. Continue the heat for a few minutes longer, stir with a glass rod or piece of rattan, remove the vessel from the fire, and set it aside for twelve hours. At the end of this time, crystals of morphia will separate on the sides and bottom of the vessel; filter the liquor, collect the crystals on the filter, wash them well, till the last washings pass off colorless, and while still moist, transfer them into a vessel, and digest with *proof spirit*, using about *one fluid ounce* of proof spirit to the morphia obtained from one pound of opium. (I conduct this part of the process, by corking the vessel if a flask, and if a bottle fitting a stopper to the mouth of it, and exposing the same to the heat of the sun for about four or six hours.) Transfer the morphia on a piece of long cloth and press with the fingers. Take the morphia now partly decolorized, and dissolve it in a

*sufficient quantity* of *hydrochloric acid* diluted with distilled water, promote the solution by gentle heat, add a little powdered chalk or marble to the mixture for the purpose of neutralizing free acid, and filter ; evaporate the filtrate by water heat, till a pellicle forms on the surface, and set the vessel aside that crystals may form. Press the crystals through a piece of long cloth, spread them on blotting paper to dry. Evaporate the mother liquor that more crystals may form, press these as the first, and dry on blotting paper. The hydrochlorate of morphia thus obtained is not perfectly white, it has adhering to it with great pertinacity a purplish coloration, this is more especially the case with opium grown in Bengal ; to remove it, powder the hydrochlorate of morphia, and mix it intimately with *prepared animal charcoal*, form the mixture into a paste with hot water, and allow it to remain aside for three or four days, or even for a week, the longer this is kept the better, as the decolorizing action of the charcoal is allowed full play, from repeated trials, I found a week's time sufficient for this purpose. Add sufficient distilled water to the mass, apply heat by steam, strain through cloth while hot, and cast the strained liquor on a filter ; add half as much water to the charcoal mass, heat, strain and filter as before, (it may be necessary to repeat this operation a third time, as the morphia adheres to the finely divided charcoal with great tenacity.) Wash what remains on the filter with hot or boiling water, this is done effectually by means of a syringe bottle. Evaporate the filtered liquor that crystals may form, press and dry as before, and bottle for use.

I have been thus particular in the description of this process, entering into minutiæ, conceiving that it might be useful to some medical men, who, being situated in isolated and distant places, might require to prepare this important medicinal substance for themselves.

*Remarks.*—It is well known that opium is the concrete juice obtained by incisions made on the surface of the unripe capsules of the papaver somniferum. The juice as it first exudes is milky, but by partial evaporation of its watery particles it con-

cretes, and being collected together, is fashioned into the different forms in which it is found in the market. Its color and aroma depend much on the locality where the plant is grown, and differ somewhat in the various samples. The opium from Bengal supplied to the public hospitals when fresh is fawn colored, the odor is peculiar though not disagreeble. Some samples of opium, the produce of the Neilgherry Hills, which I have seen, were of a dark color, the smell was not so marked as in the Bengal variety ; the relative quantity of morphia in each however did not materially differ, so that color and smell form no criteria of the quality of the article. The only sure way to ascertain this point is, to determine by experiment the quantity of morphia a known weight of the substance will yield. This may be done in the following manner. " Take 500 grains of opium : cut it in very thin slices, and macerate it in *six fluid ounces* of pure water for 24 hours. Then triturate in a mortar, and pour on a filter the mere divided parts which the liquid holds in suspension : add more water to the residue, again triturate, and put it on the same filter. Wash with distilled water until the water passes colorless. Add to the filtered solution an excess of well hydrated lime ; boil for about five minutes, filter and acidulate the filtered solution with hydrochloric acid; which saturates the lime and combines with the morphia. The latter is to be precipitated by ammonia, expelling any excess of the latter by ebullition. The morphia is to be collected on a filter, washed with dilute spirit, and then dissolved in boiling rectified spirit : it crystallizes on cooling. To separate the narcotine it is to be washed with ether. The morphia is then to be dried and weighed." *Acar on medicinal substances.* (Pharmaceutical Times, vol. iv, page 686.) The great commercial demand for this article, and its high price, tempt the venders or dealers of this drug to adulterate it, the sophistications are not easy of detection.

Opium contains several chemical principles, all of which may be separated. Some of these are active therapeutic agents, others are inert. Of those that are active morphia is the chief

constituent, upon it the narcotic and sedative properties of opium mainly depend; codeia, and thebaia are also active substances. Narcotine, narceine, and meconia, have little or no action on the animal economy. Pseudomorphia, which resembles morphia in several of its properties, is by no means active like that substance; eight grains of it administered to a rabbit had no effect. These chemical principles are contained in opium in variable quantity, and exist chiefly in combination with meconic acid; narcotine however is said to be in a free state. An analysis of five specimens of Smyrna opium by Mulder gave the following average results.

| | |
|---|---|
| Narcotina... ... ... | 7·713 |
| Morphia... ... ... ... | 6·228 |
| Codeia... ... ... | 0·767 |
| Narceia... ... ... ... | 9·000 |
| Meconia... ... ... | 0·790 |
| Meconic Acid..... ... ... | 6·121 |
| Fat... ... ... ... | 2·209 |
| Caoutchouc... ... ... ... | 4·338 |
| Resin... ... ... | 2·753 |
| Gummy extract... ... ... | 25·370 |
| Gum... ... ... ... | 1·706 |
| Mucilage... ... ... ... | 18·733 |
| Water... ... ... ... | 12·108 |
| | 978·36 |

The rationale of the process described above may be summed up as follows:—About 70 per cent. of opium is soluble in water, to dissolve this quantity it requires a large amount of this fluid, the quantity of water employed is therefore in the proportion of twelve parts to one part of opium. Heat assists the solution. Morphia exists in opium as before mentioned in combination with meconic acid and also with a little sulphuric acid. The meconate of morphia is a sparingly soluble salt. When solution of opium is boiled or heated with cream of lime, the meconate of morphia suffers decomposition, an insoluble meco-

nate of lime separates, and the morphia at first precipitated is re-dissolved by the excess of lime present. On adding powdered sal-ammoniac (chloride of ammonium) to the concentrated liquid holding the morphia in solution and gently heating it, a reaction ensues, the chlorine of the sal-ammoniac combines with the calcium forming a very soluble salt, and the ammonia which becomes free escapes in the gaseous condition; water is at the same time formed, and the morphia which is thus liberated from being kept in solution by the transposing effects of the sal-ammoniac is precipitated. The following equation will render this intelligible.

$$\underset{\text{in solution}}{CaO + \text{Morphia} + NH_4Cl} = \underset{\text{in solution}}{CaCl + HO} + \begin{cases} NH_3, \textit{ volatile.} \\ \text{Morphia, } \textit{precipitated.} \end{cases}$$

The digestion with proof spirit, and subsequently with prepared animal charcoal, is for the purpose of removing coloring matter.

From thirty-six pounds of Bengal opium worked by the above process, I obtained twenty-eight ounces (avoirdupois) of hydrochlorate of morphia.

On another occasion, twenty-eight pounds of opium from the same source, gave fifteen and a half ounces (avoirdupois) of hydrochlorate of morphia, being at the rate of three-quarter of an ounce to the pound. This reduced into grains is, $15{\cdot}5 \times 437{\cdot}5 = 6781{\cdot}25$ grains; and regarding the hydrochlorate as an anhydrous salt, consisting per cent. of

| | |
|---|---|
| Morphia... ... ... ... | 88·75 |
| Hydrochloric Acid... ... ... | 11·25 |

the fifteen and a half ounces of the hydrochlorate contain 6018·35 grains of morphia,=4·298 per cent. of the opium employed; this agrees very closely with the product obtained from the six pounds of opium, given above. But the hydrochlorate of morphia, according to Dr. O'Shaugnessy and other chemists has some water in its constitution, the per centage therefore of morphia will be a little less than that calculated above. The

opium used was of the same kind as that which is supplied to the public hospitals of this Presidency.

Though foreign to the subject of this article, I introduce here the preparations of the salts of morphia, as given in the Pharmacopœia of the Royal College of Physicians of London, 1851. It may serve as a ready means of reference to those who are in practice.

*Liquor Morphiæ Acetatis.*

Take of Acetate of morphia, four drachms,
Acetic acid fifteen drops,
Distilled water a pint,
Proof spirit half a pint;
Mix and dissolve.

*Liquor Morphiæ Hydrochloratis.*

Take of Hydrochlorate of morphia four drachms,
Distilled water a pint,
Proof spirit half a pint;
Mix and dissolve.

*Medicinal Uses.*—"Morphia is the most active principle of opium, but owing to its sparing solubility in water is never used medicinally whilst uncombined. Its compounds with both the acetic and hydrochloric acids form salts, which being soluble admit of being exhibited in very small doses and with great effect. The advantage which they seem to possess over opium is chiefly ascribed to the absence of *narcotin;* their use in ordinary cases not being followed by either headache or sickness. A fluid drachm of each of these preparations, contains respectively one grain of the acetate or hydrochlorate of the alkaloid.

Dose ♏vi to ♏xv." (*Phillips' Translation of the London Pharmacopœia*, 1851.)

# Editorial Remarks.

THE present state of the subordinate medical department is very much advanced compared to what it was a few years past. Every one who is now admitted into its ranks receives a professional training, equal to what is obtained by students attending some of the medical schools of England. The indian student, however, labors under one disadvantage, which consists in his preliminary qualifications being below par compared to those who prosecute their studies for the medical profession in England. This difference in preliminary acquirements is a material detriment to the indian student, and the deficiency will continue to exist to a greater or less extent, until the standard of education in the provincial and presidency schools generally become much improved, and the prospects and advancement of the members of the service be placed on a footing better than that which obtains at present. Tardy promotion, small allowances, hard work, and rigid subordination, do not afford inducements to well educated men to seek employment in this line of life. Did not Government undertake the expense of educating the medical subordinate, and at the same time salary him during the time he is under tuition, he must ever have continued ignorant of the ground work of his profession, save what he could pick up by industrious study and personal observation of disease. Of this description was the medical subordinate prior to the establishment of the medical school, at least of the greater number of those who then composed the ranks of the subordinate medical department; and it must be admitted, that several thus circumstanced have proved themselves no unworthy members of the profession, the credit and honor of having made themselves so generally useful amidst the disadvantageous circumstances of their position are all their own, for they are solely

indebted to their personal exertions for the state of efficiency to which they have attained.

Since the medical school was established a considerable number of educated men have passsed into the service; men whose qualifications render them capable of holding more important trusts than are usually assigned to them. Acquainted as we personally are with the labor, care, and pains, taken to educate the young men in the medical college; bearing in mind the extensive range of subjects taught them, and keeping in view the zeal, ability, diligence, and perseverance, with which the majority of lads prosecute their studies, we can confidently assert, that the young men now leaving college, (the apprentice section of them), will after a few years of experience, be equal to all the duties that appertain to the medical profession, providing they keep up their studies.

---

So long as the Subordinate Medical department shall continue a distinct arm of the Service, it will ever remain indebted to the late Dr. Mortimer, for having originated the Madras Medical School, now a College; to G. Harding Esquire, late Surgeon of the General Hospital, and Superintendent of the Medical School, the associate and co-partner of Dr. Mortimer during the early years of toil in the institution; and to T. Key Esquire, Superintending Surgeon, late Professor of Chemistry, and now President of the College. The unceasing exertions of the latter gentleman, along with the help of others, gave such an impetus to affairs, that the College has steadily advanced to its present state of efficiency. It is now on the verge of being recognised by the Royal College of Surgeons London, towards seeking to effect which Professor J. Shaw, has evinced much interest, and taken considerable pains. The recognition when obtained will be a point gained of no small importance.

The Subordinate Medical Department must further acknowledge its indebtedness to the ruling authorities of the day, for the

kind and liberal support which the Medical College has invariably received at the hands of the successive Governments of this Presidency ; it is to their fostering care that the institution owes its present exalted position, and to the Government alone must it look up for its further onward progress. To the Court of Directors also is the Medical Subordinate placed under lasting obligation, for the professional education he gratuitously receives ; an education which costs students in Europe some thousands of rupees to accomplish. Further, the Court have always taken an interest in the welfare and progress of this Institution, and have readily supported measures for its advancement, not even sparing expense when that was concerned.

---

THE public Annual Examinations for the Session 1852-53, of the several classes under tuition in the Medical College, commenced on Wednesday, the 13th April, and occupied several successive days. The Examinations were divided into *oral* and *written*, and were conducted in the order given below. At the oral Examinations were present, the Members of the Medical Board, their Secretary, the Professors of the College, some medical, and a few other gentlemen at the Presidency. The subjects were selected by the Medical Board, they were committed to paper by their Secretary, and brought by him under cover to the College on the day of the Examinations. They were communicated to the Professor Examiners, after the assembly of the classes, and immediately before the commencement of the Examination.

### *Oral Examinations.*

Wednesday, April 13th, 4th, or Senior Class of Apprentices (12), (including 1 stipendiary and 2 Private students) and 3rd, Class of Pupils (19). The subjects selected for examination were in

SURGERY. *Inflammation*—the different kinds of—signs which characterize it—the pathology of.—Treatment, local and constitutional—the different remedies. *Ulcers*—the different kinds of—characters which distinguish each. Treatment—appropriate remedies for the different kinds.

MEDICINE. *Fevers—Intermittent Fevers*—symptoms which mark the three stages—pathology of intermittents—theories respecting them. Causes—sequelæ—treatment during the paroxysm—treatment during the intermission—par-

ticular remedies—*Remittent fever*—in what respect it differs from intermittent—symptoms—complications—causes—morbid appearances, Treatment. *Dysentry.* Symptoms—causes—morbid appearances.—Treatment.

MIDWIFERY. Signs of Pregnancy.—Labor—different kinds of labor—natural and difficult.—Treatment of natural labor.

DISEASES OF WOMEN.—Puerperal fever. Phlegmasia dolens.

DISEASES OF THE EYE. Conjunctivitis.—Purulent and gonorhœal ophthalmia.

ANATOMY. Peritoneum—the different organs which it invests—the omenta. Liver—its structure and functions—Bile—nature of the secretion—its uses.

MATERIA MEDICA. *Cathartics*—rhubarb—aloes—croton oil—oil of turpentine. *Emetics*—ipecacuanha—mustard—common salt—tartar emetic—wine of antimony. *Diuretics*—Digitalis—how it operates as such. *Tonics*—quinine bark—mineral acids.

Friday, April 15th, 3d class Apprentices (12). The subjects chosen were in

SURGERY. *Dislocation of hip joint*—different kinds of—signs which distinguish each. Treatment—manner of applying the pulley in reducing dislocations. *Dislocations of shoulder joint*—the different kinds of—how reduced. *Compression of the* brain from depressed bone—treatment of—*trephining*—cases which demand this operation—operation how performed.

2d Class of apprentices (23), and Pupils (16). The subjects chosen for examination were in

SURGERY. Anthrax—symptoms of—condition of the vessels of the diseased part—terminations—local treatment—general treatment.

3d Class of Apprentices.

MIDWIFERY. Pelvis—the organs contained in it. Anatomy of the female organs of generation (internal)—menstruation—disorders of menstruation—diameters of the straits of the pelvis.

DISEASES OF THE EYE. Cataract. Ulceration of the Cornea.—Granular conjunctivitis—Staphyloma.

Monday, April 18th, 1st or Junior Class of Apprentices (19, including 1 stipendiary student), and Pupils (20). The subjects selected were in

ANATOMY.—*Scapula*—description of—and the muscles and ligaments attached to it—humerus—ulna—radius—the bones of the wrist—the description of these bones severally—and the muscles and ligaments connected therewith.

2d Class of Apprentices and Pupils.

ANATOMY and PHYSIOLOGY. The thorax and its contents, and functions of the viscera. Parieties of the thorax—the investing membrane of this cavity. *Lungs*—their structure. *Heart—Pericardium*—structure of the heart—disposition of its muscular fibres—the cavities of the heart. *Physiology of circulation*—constituents of the blood—different pathological conditions consequent on an altered condition of the globules and fibrine—form of the red blood globules in mammals—in reptiles—&c. Explanation of exosmose and endosmose.—Rythm of the heart—what it means—Sounds of the heart—upon what dependent—the order of their occurrence. Changes of the blood in respiration.

3d Class of Apprentices.

ANATOMY and PHYSIOLOGY. *Abdomen and its contents.* Parietes of the abdomen—structure of the mucous membrane of the stomach—Gatric juice—its constitution—how secreted—digestion of food. Structure of glands—structure

of a simple gland. Kidney—its minute anatomy—secretion of urine—constituents of urine—urea.

Tuesday, April 19th, 1st Class of Apprentices and Pupils.

CHEMISTRY. *Phosphorus*—sources of—how procured—the products of its combustion (with iodine, with chlorine gas, and by friction, experimentally exhibited)—compounds of Phosphorus with oxygen, (oxide of phosphorus, and Phosphoric acid prepared, the latter by burning Phosphorus in a jar of oxygen gas.) The modifications of this acid—how prepared—their characteristic differences. Tests for Phosphoric acid, (experiment). *Chromium.* Compounds of this metal found in nature—its oxides—salts with potash—how prepared—nature of the chemical reactions (shown by diagrams on the board)—reduction of chromic acid.—*Alcohol*—substances from which it is prepared—fermentation—changes that take place in alcoholic fermentation—*Ether*—how prepared—chemical changes that take place in its preparation (shown on the diagram board)—*Acetic acid—Chloroform.*

BOTANY. *Structure of plants*—elementary tissues—compound organs. Functions of roots—Respiration of plants—Reproduction of plants. Uses of the natural and artificial systems of classification. Distribution of plants over the surface of the globe—agents employed in their dissemination.

2d Class of Apprentices and Pupils.

MATERIA MEDICA, *Narcotics*—Opium how obtained—how to distinguish good opium. On what its aroma depends—tests for morphia and meconic acid —administrationof of opium—its therapeutic effects—the preparations of morphia used in medicine—officinal preparations of opium—Belladonna—Hyoscyamus—Datura—Nux vomica—Strychnia—Hydrocyanic acid—*Tonics.* Quassia —Gentian—Simaruba.

The answers of the students to the several questions put to them on the different subjects of study were creditable on the whole. Some, by the readiness of their answers showed that they had an intimate knowledge of the subjects they were taught. One of them in particular, (Harvey, an Apprentice of the 2d Class), excited our admiration when describing the course and arrangement of the muscular fibres of the heart ; which he did without the least error, and with a facility and clearness of expression as bespoke him to be a very intelligent student. The Class in Chemistry did remarkably well, astonishing their teachers, who were not prepared for so bright a result. On this we may be permitted to remark, that the system of instruction recently introduced into the College, by exercising the students orally on the subjects taught in the lecture room, which duty is performed by the Assistants of the College, or by the most advanced of the students, promises to be of considerable advantage. The students, by this means, become familiarized with the subjects of instruction, and those among

them who cannot keep pace with the Professor in the lecture room, have an opportunity afforded them of picking up what must otherwise have been lost, or but imperfectly learned. The benefits of this system are more particularly apparent among the Native Pupils, the majority of whom from their imperfect acquaintance with the English language, are not capable of profiting readily by lectures.

*Written Examinations.*

The Apprentice section of each class only took part in these examinations. It was left optional with the Native Pupils to engage in them, but none of them came forward. On each day appointed for this purpose, the students assembled in the theatre ; they were furnished with writing materials, and the Secretary to the Medical Board read to them the questions which he brought with him, none of the lads were previously acquainted with what the subjects were to be. They were not allowed to have access to books or papers in giving the written replies, and during the time they were so engaged, they were supervised by the Professor or their Assistants, who took duty for the purpose of observing regularity and order.

April 14th, 1853.—Questions put to the 4th Class.

1. Let me hear what you have to say on the effects of suspension, or deficiency of respiration ?

2. Tell me how you prepare Iodine, Iodide of Iron, Iodide of Potassium, and the Chemical changes that take place ; their operation and dose, and method of administration ; the officinal preparations, with their composition and dose ?

3. Let me hear what you have to say on the pathology of Dropsy in general, and of Hydrothorax in particular.

(To answer any two out of the three questions.)

April 16th, 1853.—Questions put to the 3d Class.

1. Let me hear what you have to say of the Liver ; the circulation thereof ; the Bile, its composition and uses.

2. Let me hear what you have to say on the subject of Asphyxia, the causes which produce it, and the sequence of the phenomena observed therein.

3. Let me hear what you have to say on the means and instruments used for the suppression of hœmorrhage ?

(To answer any two out of the three questions.)

April 20th.—Questions put to the 3d Class.

1 Let me hear what you have to say on the subject of the changes which the food undergoes in the process of digestion ?

2. Let me hear what you have to say on the subject of ulcers, the various kinds thereof, and their appropriate treatment ?

3. Purgatives.—Give me the definition thereof, and let me know those in general use from the vegetable and mineral kingdoms,—their preparation, and doses ?

4. Give me the mechanism of respiration ?

(To answer any three out of the four questions.)

April 21st.—Questions put to the 1st, or junior Class.

1. Let me hear what you have to say on the food of plants, and the manner in which it is obtained, and the influence of vegetation on the atmosphere ?

2. Tell me what you know of the compounds of Nitrogen and Oxygen ?

3. Give me a descriptive account of the popliteal space, and of the knee joint ?

The written answers were referred for report to the Members of the Final Examination Committee, the President of which remarked upon them in the following favorable terms. "The exercises were all more or less meritorious, showing a good practical knowledge of the different subjects treated of, and proving the industry and attention of the Pupils to the instructions they have received at the College."

The papers of W. Baker and Duckworth, students of the 4th or Senior Class, were reported as being the best, and of about equal merit. The answers of Wells and Lincoln were said to be very creditable, and the best of their Class (3d). The exercises of the 2d Class were reported as being unquestionably of great merit, especially those of Harvey and Friddell. Duckworth, Higgins, Lyons, and D'Santos of the Junior Class, were said to have showed great knowledge of the subjects treated of. The Committee further remarked that they "cannot conclude without expressing their unqualified satisfaction at the great ability evinced in these exercises, reflecting as they do the greatest credit upon the Professors of the institution."

*Final Examination of Military Students.*

The Committee for this purpose was composed of J. McKenna, Esq. M. D., Surgeon, President; J. T. Blenkin, Esq. and C. D. Currie, Esq. M. D., Assistant Surgeons, Members. Ten

Apprentices and nineteen Pupils appeared before the Committee, which met at the Medical College on 15th April, and several succeeding days.

The report on the result of the examination was communicated by the President in the following words. "The Committee observed with great pleasure the high proficiency displayed by the students in the several branches of study on which they were examined, enabling them to report nine out of the ten qualified for the public service, in which there is every probability of their doing credit to the institution they are now leaving. * * The Native Medical Pupils, nineteen in number, passed a creditable examination, excepting five who were not reported qualified, owing to some difficulty in expressing themselves."

The Committee recommended that Eagles, the apprentice who failed to pass, be allowed three months' further study, his failure being attributed partly to his having been sick in hospital for some months.

The Medical Pupils who were rejected, were also recommended to be remanded for six months' further study.

*Examination of Stipendiary Students, and 2d Dressers, for the situation of Native Surgeon.*

The Committee appointed for this purpose consisted of a Government Examiner, and two Assessors. The gentlemen composing the Committee were J. Sherman Esq., Physician General; T. Key Esq., Superintending Surgeon; and R. Cole Esq. Garrison Surgeon; the former as Government Examiner, and the two latter as Assessors. The examination occupied several days. The Professors of the College assisted in putting questions to the several students on the different subjects selected by the Government Examiner during the examination.

Five students presented themselves.

1—Mauselomoney, a student on the receipt of Government stipend—2. Chinnatomby (alias Mills) a Ceylonese, known as the "*Lane Scholar*," being

on the receipt a stipend from the funds raised in the name of the late Dr. Lane of this Presidency—3. Mr. Seth Sam, a young Armenian gentleman—4. 2d Dresser Neary—and 5. 2d Dresser Hyasawmy. The first three were under instruction in the College for a period of 5 years, the term prescribed for prosecuting their studies. Neary was under instruction for two years, and Hyasawmy, for one.

The Government Examiner reported favorably on the attainments of the first three students, and pronounced them qualified for independent practice. Neary was rejected on the ground that his qualifications were below the standard required for the situation of Native Surgeoncy. Hyasawmy was reported as having made creditable progress in the subjects on which he was examined. This latter student will appear for the final examination at the end of next session. We wish him success.

*Distribution of Prizes, &c.*

On Friday, April 29th, in the afternoon, the whole of the Classes assembled in the theatre of the College, and the Governor, the Commander in Chief, Members of Council, Members of the Medical Board, the President and Professors of the College, some gentlemen of the Staff and of the Civil Service, and a good number of the medical gentlemen at the Presidency were present. At a ¼ past 4 p. m., the proceedings of the evening commenced by the Secretary to the College reading the Annual Report of the Institution, for the session 1852-53.

In the report was noticed some changes which took place among the Professors at the commencement of the session, which consisted in the appointment of Dr. Arthur to the Chair of Medicine, during the temporary absence of Dr. Evans, and of Dr. Cleghorn as Professor of Botany, and Materia Medica, during the employment of Professor Mayer on other duty, or until further orders.

The number of students under instruction of all grades and classes was 120, out of which 9 lapses occurred during the session.

The conduct of the students in College was good. The progress of the Apprentices in their studies was spoken of in terms of high commendation. The progress of the Native

Pupils was said to be very unsatisfactory ; so much so, that the majority were said to be unable to comprehend the lectures which they attended, and therefore did not profit by them. This state of deficiency of the Native Medical Pupils was attributed by the Council to the want of sufficient encouragement and prospects held out to members of the Native Subordinate Medical Department, which operated injuriously by deterring educated men of this class from entering the profession. The Council alluded to a scheme which they sometime ago proposed for remedying the evil complained of, and were of opinion, that its adoption was a great desideratum, for the purpose of securing better qualified natives than those who now enter the department. Allusion was also made to the advantages derived by Native Medical Pupils, in being allowed to study english in the Madras High School gratis, for one or two years, prior to their entering as students in the Medical College—but the Report remarked that to obtain the benefit to its fullest extent from this system of preliminary instruction in english, it required the attendance of the Pupils at the High School for several years. The progress of the native stipendiary students with one exception was creditable.

Extracts from the Reports of the several Professors in their respective departments of instruction were read, which contained many excellent and judicious remarks. The system of clinical instruction at the General and Lying in Hospitals was spoken of in terms of high praise, both Apprentices and Pupils having much benefitted by it.

The Museum and Library were noticed. 131 new specimens were said to have been added to the former, during the session ; and the latter contained upwards of 1400 volumes. The Museums of Botany and Materia Medica were receiving additions to their stock, partly by private contributions, and partly from other sources. The want of a competent draughtsman to execute drawings and diagrams for the purpose of illustrating lectures was dwelt upon. The scheme for remodelling the pay of the apprentice department was reported upon in favorable

terms—the surplus accruing therefrom, during 21 months of its operation, was said to be about 2,000 Rs., after deducting the pay of extra servants employed in the College paid from this source. The arrangements made regarding temporary assistants and prosectors did not answer so well as was expected, the Council however had some changes in contemplation to introduce upon this point. The arrangements made by Government to meet the wants of the anatomical department in reference to dissections answered very well. The want of sufficient room in the College to meet the increasing demands of the institution was dwelt upon, and the Council hoped to see their wants in this respect soon supplied. The expenses of the College were noticed. The expenses exclusive of the salary of the students and of supplies from England were said to be Rs. 1456-3-0, per month. The recognition of the College by the Royal College of Surgeons was on the eve of being accomplished. The Report contained other matters of detail which we have no room to notice.

After the reading of the Report was finished, Prizes of books and medals were distributed to the most advanced of the Students.

| | | |
|---|---|---|
| Higgins,..... | 3 prizes of medical books. | |
| Harvey,..... | 4 do. | do. |
| Wells,..... | 4 do. | do. |
| O'Keeffe..... | extra prize. | |
| Mauselomoney(stip. student).. | 3 prizes | do. |
| Duckworth, (senior)..... | 2 do. | do. |
| Chinnatomby (Lane scholar).. | 1 prize | do. |
| Baker..... | 1 do. | do. |
| Lincoln..... | 1 do. | do. |
| Fitzpatrick..... | 1 do. | do. |
| Colendavooloo... ..... | 3 prizes | do. |
| Mooneasawmy... ..... | 3 do. | do. |
| Rajah Gopaul..... | 1 prize | do. |
| Ailsworth..... | 4 prizes | do. |
| Arogheum..... | 1 prize | do. |
| Lutchmenaroidoo ..... | 2 prizes | do. |
| Hadden..... | extra prize, | do. |

Mauselomoney (stip. student). "Johnstone Gold Medal."
Ailsworth..... "Government do." (permanently).
Mooneasawmy..... ..... do. do. (temporarily).

All the prizes were given for attainments made by these students severally in the different branches of study, excepting the prize given to Hadden, which was for a well arranged series of notes taken by him from the Lectures on Physiology.

While on the subject of prizes, we may be permitted to remark, that there are two prizes of books allowed for each division of the several classes (apprentices and pupils) in the different departments of instruction.

The apprentices and pupils who stand at the head of their respective classes in the register of merit at the end of the session invariably receive the prizes assigned to each class. The gold medals are adjudged in like manner, but these are only granted to students who have completed their education. The medals are not given as a matter of course every year; the conditions of the grant being, that the student be of good character, and that he evince intelligence during his career in College, to entitle him to the prize. There are two gold medals—one, the "*Johnstone medal*," a private grant, open to competition by the apprentice section of the class, with whom are included stipendiary and private students; and two, the "*Government gold medal for Native Medical Pupils*,"—this latter, as its name imports, is for the pupil students. Mauselomoney was the successful student who carried away the "Johnstone Medal" for the session just closed. He is said to be a deserving and intelligent young man, as we ourselves have reason to know, and we are glad that he has reaped the fruits of his industry and labor; but it must be borne in mind that he is a student of *five years' education* in College, the apprentices competing with him for this honorary distinction were students only *four years under instruction;* it becomes a matter of some consequence for the College Council to determine, whether they will allow for the future, students

who have been a greater number of years under instruction, to compete for prizes with those who have been under instruction for a lesser term.

Nine medical apprentices, and fifteen medical pupils, who were reported qualified for employment in the public service, received certificates of qualification for the grades of Assistant Apothecary, and 2nd Dresser, respectively.

The Physician General addressed the Governor on the result of the examinations of the stipendiary and private students, which he conducted as Government examiner.

One stipendiary student, one Lane scholar, and one private student, reported qualified for independent practice, were introduced by the President of the College to the Governor, and received from his hands certificates (Diplomas) which admitted them as Graduates of the Medical College. The graduates agreed to subscribe to the "*Sponsio Academica*" of the College, which the Secretary read to them. They were afterwards addressed by Professor J. Shaw in an eloquent discourse, which he had prepared for the occasion, and which consisted of two main parts;—1. *Historical*—in which was described the origin and progress of the Medical School—the difficulties this institution had to contend with during the early years of its existence—how these were gradually overcome—the effect which communication by steam with India has had on the medical education of this Presidency. The changes wrought by the addition of an increased number of teachers to the school—the dates on which these changes took place—the difference in the extent of education imparted to students who attended the Medical School in former years, compared to what is taught at the present time—the energy of the first teachers—(the late Dr. Mortimer, and Mr. Harding, late Superintendent of the School, were spoken of in honorable and praiseworthy terms). Some discursive remarks unexpectedly oozed out, to the effect, that in bygone years, the Subordinate Medical Department was the

*menagerie* for butlers' and ayahs' sons—(this latter was not to our taste—we thought the reflection, however true in some few cases, unsuited to the dignity of the occasion, and the object of the address). The 2d main division of the discourse was *Exhortative* or *Preceptive*.—It appealed to the feelings of the graduates. It impressed on them the necessity of strict morals in the exercise of their calling—expatiated on the importance of speaking the truth on all occasions, even in matters of the most trivial nature—stated that a lie once detected, would ever after occasion mistrust in the minds of those with whom they had to deal, even though the truth were afterwards spoken by them. Stated that *honor* and *truth* were synonymus, that they meant one and the same thing—that a breach of one implied a breach of the other—exhorted the graduates to be studious—that it was now they commenced to be students for themselves. The discourse contained more didactic matter, and concluded by wishing the graduates success. [The Military Students about to leave College, though not personally addressed, we hope profitted by the discourse.]

His Excellency the Governor then addressed the Assembly in words to the following effect. He stated that the proceedings of the evening afforded him much pleasure—that the report of the College was satisfactory to him, and hoped that it was equally so to all present. Stated that he took great interest in the Madras Medical College—that so long as he was at the head of the Government, any suggestions for its improvement, from the Medical Board or from the College Council would meet with attention from the Government. Was of opinion that a suitable building should be erected for the College—that the subject was under consideration, that perhaps it would be necessary to refer to the Court of Directors for the purpose of erecting a new building for the College. Was not certain whether he would remain to be present at the conclusion of the session next year, but, whether present or absent, he would seek the welfare and advancement of the Madras Medical College.

We have pleasure in mentioning that Assistant Apothecary A. Bogg, and 2d Dresser J. Rajantheram, No. 308, have had adjudged to them the Government (silver) prize medals, for the past year, for their essays respectively, on Dysentery, and Intermittent Fever. The pages of this journal, during the short time that it has been in existence, testify to the fact that Mr. Bogg has been assiduously engaged in the pursuit of medical knowledge. He is an instance of what may be gained by diligence and perseverance in study. We hope many will follow in his wake, and we can for a certainty avow, that one means of improvement is to write on medical subjects—this leads to reflection—reflection expands the intellect, and necessitates research—research carries in its train profitable reading—which conjoined with personal observation constitutes intelligence—intelligence begets consciousness of merit, and merit commands respect! We trust our brethren of the service, will furnish us with matter for publication in the pages of this journal, of which we at present are in need.

---

It affords us pleasure to be the medium of communicating to Mr. G. W. Flynn, late Editor of this journal, that the members of the Subordinate Medical Department express their heartfelt acknowledgments to him, for the service he has rendered them, in having conducted for their use and advantage this periodical for the space of fifteen months; a work which he has done with ability and success. He has the good wishes of all of them for prosperity in his new career of life. We trust this testimony of the appreciation of Mr. Flynn's services by the department, will be cordially received by him.

---

# Selections.

---

## *Local Hysteria and Catalepsy, Clinical Lecture, by* R. B. Todd, M.D. F.R.S.

### 1. *Local Hysteria.*

Harriet B., aged 30, was admitted on the 7th of May, 1851. She suffered acute pain in the right hypogastric region of the abdomen; the pain was of so acute a nature that she could not bear the slightest pressure on the affected part; even the weight of the bed clothes was painful to her. This pain was her main complaint, and it is for the relief of this she has been admitted to the hospital.

The pain is referred to the right hypogastric region, over the position of the right ovary, and the painful part occupies a circular space of about two and a half or three inches in diameter. There is extreme tenderness to the touch; even when the integuments are pinched up with the utmost gentleness, and with every care to void compression of the subjacent parts, she shrinks and appears to suffer great pain. Deep pressure on the corresponding region of the left side causes pain likewise, as if by implicating the right side.

There is another very important feature in the case which deserves especial notice; it is this, that when her attention is much engaged, she certainly suffers less, although she cannot be said to be free from pain. Upon making a careful examination of the part, no tumour could be detected; and, upon pressing deeply, no abnormal condition of the ovary could be discovered; and although there was pain, there was no increase of it to a proportionate extent.

Her history was found to be as follows:—She is unmarried; but, many years ago, she fell a victim to the seduction of some improper person, and, having become pregnant, she suffered a very severe labour, in which the perinæum was lacerated; in consequence of this injury, she was under surgical treatment in the hospital for some time.

Three months before her admission into the hospital, she had a severe attack of diarrhœa, accompanied by vomiting. Her bowels have since continued in an irritable state. The catamenia have always been

irregular, and there has been a constant drain, more or less, from leucorrhœa, which increased in quantity as each menstrual period recurred.

On her admission into the hospital, she was still suffering from diarrhœa, but there was nothing very unhealthy in her expression of countenance, nor was her abdomen unduly swelled. The abdominal walls were lax, and the bowels were but slightly tympanitic. It appeared that the pain came on at the same time as the diarrhœa, and at first was aggravated by taking food.

This curious and not easily explicable connexion between the hypogastric pain and the state of the alimentary canal led me to direct the early treatment to allay irritation by checking diarrhœa, which, if allowed to continue, would have impaired her general health, and aggravated the other symptoms under which she laboured. With this view, then, she was ordered to take astringents with opium, and, under the influence of this treatment, the diarrhœa was checked, but the abdominal pain and tenderness remained as before; hence it became the more important to determine the precise nature of this pain.

The great tenderness of the skin to the slightest touch is very favourable to the view, that the pain is nervous or hysterical, which is likewise supported by the fact of the little difference in the intensity of the pain under deep and under superficial pressure.

The slightest touch to any other part of the body makes the patient suddenly shrink back with a greater or less expression of pain,—a character which belongs to all these hysterical affections. Often when you bring the finger close to the skin, there is an expression of pain nearly as great as if you had actually touched it.

Certain features in the general constitution of the patient confirm this view; she is evidently of an hysterical constitution, and exhibits that peculiar appearance of countenance pointed out by the name of "facies hysterica," characterised by a remarkable depth and prominent fulness, with more or less thickness of the upper lip. There is also a fulness and obviously drooping condition of the upper eyelids. This drooping conformation of eyelids is at once a mark of beauty, and of that from which many beautiful women suffer very much, namely, the hysterical state of constitution.

She also exhibits that irritable state of spine under which hysterical

patients are apt to suffer. The least pressure on a spinous process causes her to shrink and to complain of a pain shooting forwards from the point pressed on ; and, as is so often the case with patients of this temperament, she complains of pain from pressure, in whatever part of the body it may be applied; whenever she is touched, whether the finger comes in contact with her arms, or back, or any other part of the body, she exhibits an undue degree of sensibility, and shrinks.

Then there is yet another point about the case which deserves notice. The patient never menstruated regularly. In the vast majority of cases of hysterical affections there will be found something wrong about the uterine functions ; and, although it may not be laid down positively, that the disease (as its name implies) depends solely upon this disturbance, you will find in the many forms of hysterical affections that may be brought under notice, that it will rarely happen that there is not some deviation from the healthy action of the uterus exhibited in the disturbance of the menstrual function. A large proportion of hysterical patients suffer from leucorrhœa ; in others, the catamenia are insufficient in quantity, or occur at irregular intervals. Sometimes the menstrual secretion recurs at short intervals, and is very profuse, so that we have that condition to which the term " menorrhagia" has been applied. Perhaps there is an irritable condition of the uterus, causing almost constant pain and tenderness in the uterine region. No one of these conditions is constantly observed, but in almost every case of hysteria there is some form of forms of uterine disturbance.

Thus, then, we arrive at the conclusion, that the symptoms in Harriet B——'s case are to be referred to an hysterical state of constitution. The case is a good example of one form of local hysteria, some of the other forms of which shall be briefly noticed.

Of all these conditions, that which has been called " irritable uterus" is by far the most formidable. It is characterised by exquisite pain and tenderness in the region of the uterus,—even the slightest pressure over the organ, or the least touch applied to it in the examination per vaginam, causes great suffering, and the patient shrinks in consequence. At the same time there is no enlargement or other organic change in the organ.

Another form of local hysteria, is a pain of very frequent occurrence under either breast, and, what is rather curious, more commonly found

under the left than under the right breast. Leucorrhœa is so often concomitant with this pain, that whenever a patient complains of it she should invariably be asked if she suffers from leucorrhœa or conversely; if leucorrhœa be present in any quantity and for any time, inquiry should be made about the local pain. That there is a connexion between the leucorrhœa and the pain in the side scarcely admits of a doubt, for the pain is more severe if the leucorrhœa be profuse, and it very commonly happens, that as soon as the healthy condition of the uterine functions has been restored, the pain will disappear.

A third form of local hysteria is one which manifests itself in that pain in the stomach which is commonly called "gastrodynia," which must be very careful to be distinguished from the pain resulting from ulcer of the stomach, as an essentially different treatment would be obviously applicable to each. With reference to the diagnosis between these two kinds of stomach pain, inquiry should be made if there has been vomiting of blood, as this forms a most important symptom in the history of ulcer of the stomach. Or, if there have been no vomiting of blood, whether it may not have passed through the pylorus into the intestinal canal, in which case it will be found upon enquiry, that the patient has passed very dark matter from the bowels; the stools, in fact, exhibit a pitchy character in those cases in which blood from the stomach passes by the bowel. The effects of the treatment to which the patient is subjected will also often enable you to distinguish the true ulcer of the stomach. Beer and stimulants, and all acid drinks, greatly aggravate the pain from ulcer, while they often tend to relieve the hysterical affection. Bismuth acts very favourably in the one, but not so in the other.

Another form in which local hysteria manifests itself is exhibited in that condition called hysterical spine, a good example of which is seen in the patient whose case has led to these remarks. In passing the finger down the spine in such cases, some places will feel very irritable; perhaps the painful situation may be confined to one particular spot, or it may extend over three or four spinous processes, or the whole spine may be affected. The most important point, by means of which vertebral caries may be distinguished from the hysterical affection is this: in the vertebral disease the pain is not so excessive, and is always fixed in one part, and it will be found to increase gradually as the disease advances.

Hysteria likewise affects joints. A patient has a pain in her knee or her hip, or some other joint, no doubt that in these cases there is not only an affection of the sentient but of the muscular nerves likewise; for the muscles are either spasmodically affected, or relaxed, or paralysed, occasioning difficulty and awkwardness in the movements of the joint.

Harriet B., continued in the hospital for a considerable time. Repeated examinations tended only to confirm the diagnosis given, and she has had two or three hysterical fits. On her admission she was treated for the diarrhœa, under which she was then suffering. The diarrhœa ceased, but the pain remained unabated.

Since that time the treatment has been chiefly such as would check leucorrhœa, improve tone, and promote general health. The tepid shower-bath, the cold hip-bath, mild aperients with galbanum, and the citrate of iron, were administered for some time. The result was a very marked improvement of the general health.

Notwithstanding this treatment the pain in the hypogastrium continued troublesome, although diminished in severity. Local treatment was employed; leeches, blisters, and opiate applications were applied, without good effect. At length, fearing that these applications tended rather to aggravate the pain by fixing her attention upon the affected part, which undoubtedly they are apt to do, a blister was applied to the corresponding spot on the left side, and it was kept discharging for some time. This treatment was attended with the happiest result; the pain left the right side, but, as if in illustration of its true nature, she now complains of a pain in the left or blistered side, less severe, however, than the original pain. But from the great improvement in her general health, and the abatement which has already taken place in her symptoms, there can be no doubt that time is now the most important element in her cure.

### 2. *Catalepsy.*

Amelia D——, 38 years of age. On June 5th, about ten o'clock in the evening, (Dr. Salter states,) I was called to see a patient who had just been brought into the hospital by a policeman, who had found her speechless in the streets. I found a woman sitting in a chair, looking quite intelligent and coherent, although evidently in great excitement and distress; her expression was anxious, and she

looked from one to the other in an inquiring and imploring manner; her teeth were fast clenched, and her lips parted. On being asked who she was, she shook her head; when asked what was the matter with her, she pointed to her mouth and masseter muscles; when asked if her jaws were locked, she nodded her head. I then tried with all my force to separate them, but could not; then I felt her cheeks over the masseters, and found these muscles contracted into hard knots, which sufficiently explained the closure of the jaws. When questioned as to the cause of the tetanus, she clenched her fist and struck her left cheek, implying that she had a blow there. I said, "Have you had a blow there?" She nodded her head. We asked her if she could write. She shook her head, and clasped her hands in a despairing way. We then asked her if her husband had given her the blow. She nodded assent eagerly.

By degrees, putting all sorts of questions, and getting nods or shakes of the head, as the case might be, I learned that she lived in the neighbourhood of London, that she had been struck there by her husband that day at two o'clock, and that the blow was the cause of the attack; also, that she was thirty-eight years of age. All these things afterwards proved to be true. While answering our questions as well as she could, she suddenly, and without any warning, slid from her chair in a state of apparently complete insensibility, and would have fallen on the floor had she not been supported. Then commenced a series of spasms more strange and horrible than can be conceived or described, tetanic and clonic, partial and complete, symmetrical and irregular, varied in every conceivable and inconceivable way. First she had opisthotonos, then she was thrown forwards, then she twisted round and writhed like an eel, then she would throw herself forward and raise herself into a sitting posture, then she would roll over and over, then a slow undulation or wave of spasm would pass over her from head to foot, producing different movements of her limbs as it passed down, like a dog dying of hydrocyanic acid poisoning.

Dr. Salter, continues "the tonic spasm would suddenly become clonic, and she would throw out her arms and draw them back with great force. The legs would be affected in a similar way, or drawn up to the body, so that the heels were close to the buttocks, or thrust stiffly out. When holding her hand she would suddenly clutch mine with such force that I could not disengage it. Meanwhile her face

was undergoing all sorts of contortions, at one time expressing rage, at another intense fear, then a sneer, then a fixed and rigid stare, the eyes might be rolled upwards or downwards; the pupils dilated, and insensible to light; then the elevators of the upper lip and ala of the nose would jerk, perhaps on one side or both, exposing the teeth. The depressor anguli oris would draw one corner of the mouth down on the chin, or the platysma throw the skin in a state of rigidity;" but, as Dr. Salter remarks, it is quite impossible by description to convey any accurate idea of the extraordinary contortions of the patient.

One of the most remarkable features in the case was the rigid tonic condition of the whole muscular system. Every muscle employed in any movement became at the same time as hard as a board, and the movement was not so much executed with rapidity as with great force and even slowness. But in watching her attentively, it was plain that the movements, varied and irregular as they were, did not partake strictly of the character of involuntary movements. They were evidently influenced by a will, but by a diseased and an ill-directed will. While these spastic movements of the muscles continued, there appeared to be complete insensibility to surrounding objects; but when they ceased, her intellect seemed quickly to recover itself, and she could talk freely and collectedly. At this time she gave us her history, which we afterwards ascertained to be correct. In the midst of her narrative, her eyes suddenly became fixed, and she stared for a short time and fell off into another paroxysm, and went through the same series of varied movements and contortions as before. She continued in this state, alternately in fits and quiet, for nearly two hours, and then slept.

We had to distingush these extraordinary muscular movements from the state of trismus, of tetanus, and from epilepsy.

The distinction from trismus was sufficiently easy. The fact of her coming to herself so soon, and the subsidence of the spasmodic action of the muscles, was quite sufficient to enable us to diagnose that the condition was not trismus, and the absence in the history of all those causes which ordinarily give rise to this affection also tended to the same conclusion. In the same way that we were enabled to say that we were not dealing with a case of trismus, we also came to the con-

clusion that the case was not one of tetanus. Trismus and tetanus are but degrees of the same affection.

At first sight, the affection bore a greater resemblance to epilepsy than to any of the other forms of convulsive disease ; but there were certain distinctive features, which enabled us very positively to decide that it was not epilepsy. These were the nature of the movements, and the affection of the consciousness.

The most important feature in this case was the state of the consciousness, and by this chiefly we were enabled to decide against the epileptic nature of the case.

In epilepsy, complete coma, with total loss of consciousness, forms an essential and specific character. Convulsions form no necessary part of the epileptic paroxysm. There may be in epilepsy a complete absence of convulsions, but the insensibility is invariably present. Thus we often meet with instances in which there is sudden and even momentary loss of consciousness without any convulsion whatever. Such cases are not less truly examples of the epileptic paroxysm, than if the most violent convulsions were also present, in epilepsy the patient knows nothing of his mental state during the paroxysm—he is only conscious of his state before and after it—and the period of the fit is to him as if it had never existed.

All the symptoms and the history of the case combine to show that it was an example of a highly developed hysterical paroxysm or fit, or, more exactly, of that peculiar form of aggravated hysteria, which is called *catalepsy*.

The history of the case, shows that the patient was a highly excitable hysterical person, who has been subjected to moral, and perhaps physical influences also, well calculated to keep up that state. She states that she enjoyed good health until she reached the age of ten, when she experienced a sudden fright, and fell, in a fit, two storeys down a well staircase ; from that time to the time of her marriage (at the age of 15) she had the fits uninterruptedly, generally twice a week, and sometimes oftener. Since her marriage she has had the fits less frequently, but has never been entirely free from them.

It is difficult to determine what was the precise nature of these fits, whether they were epileptic or hysterical. Her age was more favourable to the former ; but the subsequent history, and the fact eli-

cited from her, that she was advised to marry in order to get rid of the fits, rather indicate that they were of the hysterical kind. At the same time, it is very unusual for a girl of ten years old to exhibit any symptoms of hysteria. We rarely find any manifestation of the hysterical condition until after the appearance of the catamenia. She was pursuaded to marry at the age of fifteen, and, as she had no great affection for her husband, domestic squabbles occurred very soon after their union, and in some of these disagreements her husband used violence, and in consequence she had a return of the fits.

The influence of moral causes in inducing the attacks is very manifest in this history. Ever since fifteen years of age, she stated that the slightest excitement would bring on a paroxysm. She is evidently a woman of strong passions and violent temper, and possibly her partner was as much "sinned against as sinning." She exhibited features of the same hysterical cast as in the case of Harriet B., and many of the same peculiarities of the hysterical constitution.

There is a curious family history in this case. Her paternal grandfather and paternal uncle had fits, and she was the mother of nine children, eight of whom died, seven of them in convulsions!

The same general principles of treatment are applicable whether the affection be chiefly manifested in a particular part of the body, as in the case of Harriet B., or whether it affects the system generally, as in the case of Amelia D.

Hysteria, does not result from inflammation. It is not a disease of an inflammatory type, and no part of the system whatever is in a state of inflammation. Hysteria, no doubt, occurs chiefly in persons who have a peculiar character of nervous system; very often inherited from nervous or gouty parents. It depends partly upon this original conformation of nervous system, and partly upon a depraved state of general nutrition affecting the whole system, and accompanied by a morbid state of the blood. It is always very much influenced by a disordered condition of some of the great emunctories of the body. Hence we must take care that the powers of the patient are not in any way diminished by the treatment to which she is subjected, or by the occurrence of any fluxes from any part of the body which may tend to lower her strength. We must also be careful not to overlook any derangement of the digestive organs; we must up-

hold the strength, and endeavour to improve the patient's health in every way that comes within her powers of digestion.

In a case of this kind the friends will anxiously inquire if nothing can be done to relieve the patient. I confess that I cannot tell you of any means which will cut short the paroxysm, but at the same time you may try certain means, to alleviate it. Rousing the patient is often of use—shaking her or throwing cold water in her face, or well splashing her with water is of more use. After she has come to, you should get the bowels to act freely. Means of this kind were freely used in the case of Amelia D——, and an enema containing half an ounce of spirits of turpentine and an ounce of tincture of assafœtida was administered. She took likewise for a short time, twenty minims of the fetid spirit of ammonia, and ten minims of tincture of hyoscyamus in camphor mixture every third hour.

If the patient has been indulging too freely in spirit (as is often the case with persons brought into the hospital) the stomach pump will be of great service. It rarely happens that taking blood or other antiphlogistic treatment can be called for.

The patient, Amelia D——, recovered in three or four hours from her fits, and slept the rest of the night. Next morning she was perfectly tranquil, and could not be prevailed on to remain in the hospital.—*Medical Times and Gazette, January* 1, 1853.

---

## *Concurrent Variola and Vaccinia.*

[The following cases are taken from different late numbers of the "Lancet." The first two possess very considerable interest from the *contemporaneous* evidence they afford of the reciprocally modifying influence of the two diseases, *especially in the immediate neighbourhood of the vaccinated part.* The third is not less interesting from the absence of this influence. The fourth is one in which the modification was confined to the variola. In the last two cases it may be doubted whether the small pox was concurrent with cow-pox, or only *consistent* with it; but this is a question of little practical importance. The first two cases are by Dr. Robert Fowler, the resident medical officer of the Loughboury Dispensary. He writes:]

*Case* I.—On March 31st last, I vaccinated Marianne W——,

aged 3 years, a perfectly healthy child. When next seen, on April 7th, I was told that on the very day (April 1st) following vaccination she became very sick, vomiting frequently and feverish. On the evening of the next day (April 2d) the mother fancies that there was a little redness about the chin, which, however, on the 3d of April, assumed the aspect of decided papulæ over the whole face, arms, legs, and body. I now ascertained that at the school to which the child had gone, up to the day of its being taken ill, two or three of the scholars had had the small pox about a month ago, and had returned among the other children some few days back.

*April 7th.*—The vaccine vesicles (seventh day) are larger than the variolus, very little elevated above the cuticle, irregular in shape, being not perfectly circular, but flattened and indented, and lobulated at the edges. There is evidently very little fluid in them, and no appearance of areola. The whole body is marked with distinct variolus vesicles, (fifth day,) having the same flattened aspect as, but smaller than, the vaccinia ; and being so little elevated above the surface, they do not present that "shotty" feel so characteristic of variola, especially in its popular stage. Febrile action slight.

*9th.*—The variolus eruption (seventh day) is more turgid ; that on the face is pustular, and a few of the pustules are beginning to scab ; that on the arms is hemispheroidal, prominent, and pustular ; that on the legs is opaque, but not distinctly pustular ; the central depression still existing in some of the vesicles. The vaccinia (ninth day) is not more elevated, though the fluid seems more opaque, the vesicles are now about half an inch in diameter, but still present that irregular, indented appearance round their margin, external to which there is now an areola of about one line in diameter, as there is also around each variolus pustule. The variolus vesicles in the immediate neighbourhood of the vaccinia are much smaller and less opaque than elsewhere, neither are they so turgid or spherical as in other parts of the body. The mother attributes this to the child always lying on that side, (the right,) and certainly the left arm (which, however, by some oversight was not vaccinated,) presents well filled vesicles ; the eruption of the right leg also is somewhat less prominent than that on the left, though certainly there is not that marked difference observable in the vesicles of the two arms.

10*th.*—Variolus eruption (eighth day) entirely pustular, scabbing going on in the face. Areola of vaccine vesicles (tenth day) no larger, though the vesicles themselves are larger, and beginning to lose their indented margin. The variolus eruption around vaccinia is now pustular.

12*th.*—Scabbing progressing on the face, (tenth day,) and the pustules on the arms shrivelling up; no secondary fever. A scab perceptible (twelfth day) on each vaccine vesicle; no increase of areola, nor is there any surrounding induration.

14*th.*—Some of the pustules on the legs shrivelling, (twelfth day.) Vaccinia (fourteenth day) scabbing, the scabs being rather conical, and of a dirty light brown in colour; no increase of areola.

16*th.*—All the pustules of the legs shrivelling, (fourteenth day.) Scabs of vaccine vesicle (sixteenth day) have fallen off, leaving an irregularly circular, purple—red mark, larger, though otherwise similar, to the stains of the variolus eruption; the vaccine stains are perfectly flat and smooth without the slightest indication of the small depressions and radiating lines characteristic of a good vaccine cicatrix,

19*th.*—The whole body presents purple-red stains.

[Dr. Fowler then goes on to say:]

Considering vaccinia as a disease *sui generis*, we have here two exanthemata cœxisting in one person, and each by its presence modifying, but not superseding, the regular course of the other. That the vaccinia was modified, is shown by the irregular shape and flattened condition of the vesicles, by the absence of the areola and surrounding hardness, by the shape and colour of the scab, by the duration of the eruption—the scab having fallen off on the sixteenth instead of about the twentieth day—and by the character of the remaining cicatrix. The size of the pustules and the absence of the secondary fever, notwithstanding the duration of the eruption, was not considerably shortened, indicate that the variola was of a modified kind. By those sceptical of the prophylaxis of vaccination, the above case will be greedily seized on; but are we not from past experience warranted in surmising, and even affirming, that although the discovery of Jenner was in this case incapable of arresting or superseding the progress of the poison already concocting in the blood, yet to the coexistence of

the vaccine virus this child owes the safety and mildness of its attack ?

*Case* II.—On *May* 10*th*, I vaccinated Sarah Ann A——, aged six months, and saw her again on the 17th, when the mother stated that on the Thursday previous (13th) the child seemed as if it had taken cold, and she gave it a powder from a druggist; on the day following the child was very sick, and on the Saturday morning papulæ appeared on the face, extending, on Sunday, over the whole body.

*May* 17*th*.—The child is very restless; the eyelids œdematous and closed; the whole face swollen and marked with small vesicles no bigger than those of herpes, coherent, with central depression and surrounding redness; arms, legs, and body present these minute vesicles, some smaller than a pin's head, especially in the vicinity of vaccinia; vaccine vesicles flattened and lobulated at the edges, transparent, with the central depression, but no areola or surrounding hardness; pulse feeble and quick; tongue dry, and coated with a dirty ash-coloured coat. Ordered a calomel and rhubarb purge to be given immediately, and the following mixture:—Saline mixture, two ounces, syrup of poppies, two drachms, one drachm to be taken every four hours. As much farinaceous diet as it will take besides the breast.

18*th*.—Less restless; face less swelled, and interstices of eruption not so red; eruption both variolus and vaccine, filling out.

19*th*.—Able to open the eyes a little; some of the vesicles on face becoming pustular.

20*th*.—Whole face becoming pustular; vaccinia and variolus eruption elsewhere still vesicular; very restless, knocking its muffled hands about, and continually trying to rub its face. Add four minims of tincture of opium to the mixture, and take one drachm every hour.

21*st*.—Died at 5 A. M.

The general progress of the disease, in this case, seemed to have proceeded to its fatal termination uninfluenced by the coexistence of the vaccine virus, the nervous system of a child six months old being quite unequal to the overwhelming force of the poison; nevertheless there are one or two points of interest in the symptoms which do not deserve to be passed over in silence: Firstly. In this case, as in the one previously reported, the vaccinia was evidently modified, instead of being prominent and circular, were "flattened and lobulated at the edges," presenting the appearance as if studded round their margin

with smaller adherent vesicles; but from carefully examining them I satisfied myself that they were not distinct and separate vesicles, but actual projections of the vaccine vesicle itself. Secondly. The smaller size of the variolous vesicles in the immediate neighbourhood of the vaccinia was also remarked, as in the previous case, where it was attributed by the mother to the child always lying on the vaccinated side; but in the present case the child was generally on its back, and the appearance was observed on *both* vaccinated arms, and not on the legs; therefore it seems probable, that although the incubation of the variolus poison in the blood was able to prevent the contamination of the *whole* system by the vaccine virus, yet the latter was enabled, by an extension, as it were, of its local influence, to modify the vesicles of the former in its immediate vicinity. This supposition would countenance the theory, that during the period of incubation of an inoculated poison, the virus lies dormant in the part, and that it is not until after the appearance and existence for a certain time of the eruption, that the system becomes contaminated with the protective or other influence of the disease; thus the vaccinia would at first be a local eruption, and, indeed, all practical men know that though perhaps communicable during the first few days of the existence of the vesicle, the protective power of the virus cannot thus early be equally depended on; and probably Bryce's test would succeed, even in true vaccinia, if employed in *less* than four or five days after the first vaccination. So, also, with the venereal poison; it being now pretty generally admitted that a chancre may be treated as a local sore a few days after its first appearance, without any fear of secondary symptoms.

[The next case is furnished by Mr. T. C. Beatty of Durham. He writes.]

On the 27th October last I was summoned to visit Mrs. M——, who was in daily expectation of the birth of her first child. The symptoms which presented themselves were, headache, vomiting, and pain in the lumbar region, with bearing down." Considering these symptoms as precursory labour, I prescribed a little simple febrifuge anodyne mixture, and directed that I should be sent for if she should be any worse. On the following day Mrs. M—— was very poorly, and on the (29th), at 6. P. M., was delivered of a daughter.

The case was a tedious and severe one, but requiring no especial comment, excepting the appearance on the neck, face, and arms of a plentiful crop of very suspicious looking spots, becoming so much developed during the excited circulation of severe labour, that I had no difficulty in diagnosing them to be variolus. The following day there could be no doubt that any patient was the subject of variola in a *distinct* form, but of at least average severity. The disease went through its usual stages, and ended in perfect recovery, leaving, however, a few marks of its visitation. To give the infant a chance, she was carefully vaccinated on the morning of the fourth day after her birth. True vaccinia was the result; and yet, on the eighth day after she was vaccinated, when the vesicles were fully matured, the little patient was very ill, and showed signs of an eruption under the skin, which proved to be *confluent* small-pox, of which the little creature died four days after. Several of my medical friends think the case unique; all consider it exceedingly interesting and instructive. If it sheds any light upon the *questio vexata* of the present day, I shall be rejoiced by its publication. I see it has escaped me to mention, that after I had vaccinated the child, I enveloped the arm round the punctures with linen, securing it in situ with a bandage, to prevent any variolus matter being communicated from the mother through the punctures or abrasions of the cuticle.

[The last case is by Mr. Robert Tod, of Gilmore Place, Edinburgh. He thus mentions what is essential:]

*Case* II.—On the 13th of April last, I vaccinated a healthy female child, aged five months. At the ordinary interval vesicles appeared of a large size, and well filled with lymph. So far and for several succeeding days, every thing seemed most favourable to the patient's future exemption from variola. But on the ninth day after the maturation of the vaccine vesicles, I was suddenly called to attend the child, whom I found labouring under a mild but decided attack of variola. A large crop of small pustules gradually formed and spread over the limbs and face particularly, attended with a considerable degree of constitutional secondary fever. The eruption presented all the usual characters, and pursued, the usual course of modified small pox. The patient had a good recovery.—*Half-yearly Abstract of the Medical Sciences*, Vol. xvi. p. 2.

## *New Researches on Hæmatology.*

By MM. A. Becquerel and A. Rodier.

(*Gazette Médicale de Paris.*)

[The following are the conclusions of a long series of observations upon morbid changes in the blood, which have been recently communicated to the Academie des Sciences, and reported in the above-named journal.]

1st. In the majority of chronic maladies, and in various other unhealthy conditions, there is some increase or diminution in the normal proportions of the three principal elements of the blood—the globules, the fibrine; and the albumen, and this in a single, double, or triple order.

2d. The *globules* diminish in number in the course of most protracted chronic disorders, and especially in organic affections of the heart, the chronic form of Bright's disease, chlorosis, marsh-cachexy, hæmorrhages of various kinds, excessive bloodlettings, the last stages of terbercular disease and the cancerous diathesis. The globules disappear equally in those who are sunk in the depths of poverty, and exposed to the conjoined evil of bad and insufficient food, and of dark, damp, and ill-ventilated dwellings.

3d. The *albumen* of the serum of the blood diminishes, among other instances, in Bright's disease, the marsh-cachexy, advanced heart disease, great symptomatic anæmia, and in the state of ill health induced by cancer and by poverty.

4th. The proportion of *fibrine* is unaffected, or slightly augmented, in acute scorbutus; but diminished in the chronic malady, especially in that symptomatic form which often complicates permanent heart disease.

5th. In all the cases already mentioned the quantity of *water* contained in the blood is considerably augmented.

6th. The more prominent signs of a diminution in the number of the globules are the following:—discoloration of the skin, palpitation, dyspnœa, *bruit de soufflet* at the base of the heart during its first sound, and *intermittent bruit de soufflet* in the carotids, and a *continuous* one in the jugulars.

7th. A rapid, though slight, *diminution in the quantity of albumen*, is marked by acute dropsy. A more gradual diminution is followed by the same symptom, but in this instance the loss must have been much more considerable than the former one. Dropsy, in fact, is the characteristic sign of a blood deprived of its natural amount of albumen.

8th. A diminution in the normal proportions of *fibrine* is followed by hæmorrhage of one kind or another—mucous or cutaneous.

9th. In the *anæmia* which is symptomatic of copious hæmorrhage, starvation, or exhausting discharges, the blood is less dense and more watery than natural, the globules are diminished in number, and the albumen and fibrine unaffected, or the former slightly wanting.

10th. In *chlorosis*, which is an affection distinct from anæmia, the blood may be unchanged. If it is changed, it has fewer globules and more water, and a natural or somewhat augmented proportion of fibrine and albumen.

11th. In *acute Bright's disease*, the globules and fibrine remain unaltered, and the albumen is wasted. In the *chronic* affection the globules, as well as the albumen, are deficient, and not unfrequently the fibrine also, though to a less extent than the others.

12th. Most of the idiopathic *dropsies* are due to a want in the normal quantity of the albumen of the blood.

13th. In *fatal diseases of the heart* the blood progressively becomes more and more impoverished in its three elements of fibrine, albumen, and globules, while at the same time it is rendered much more watery.

14th. In *acute scorbutus* the blood presents no appreciable alteration. In the *chronic* affection the blood is notably deficient in fibrine, while the globules are, sometimes at least, considerably increased.

15th. These facts should exercise a great influence in practice, as we possess the means of acting upon the element which may be wanting or changed. A tonic plan of treatment will be required when each of the three elements is deficient, combined with quinine, steel, or acids, according as the deficiency may be in the albumen, globules, or fibrine—one reason of the indication of acids in the latter case being the presence of free soda in the blood when the fibrine is deficient.—*Ibid. p.* 23.

*On the Use of Manganese as an Adjuvant to Iron*, by M. PETREQUIN, *followed by some Formularies for its Administration*, by M. BURIN DUBUSSION.

(*London Journal of Medicine*; and *Bulletin Genèrale de Thèrapeutique.*)

M. Pètrequin quotes various authors to prove that Manganese is a normal constituent of animal and vegetable tissues, and believes that wherever iron is present in appreciable quantity, manganese coexists with it. Hence iron alone will not always succeed in blood-diseases. M. Petrequin has observed many cases of chlorosis, which have resisted iron as obstinately as anæmia, connected with cancer or organic degeneration. Other cases again, after deriving a certain amount of benefit from iron, remain stationary. Others again appear cured by iron, but the cure is not permanent. The remedy required in these cases M. Petrequin finds to be manganese. He does not give it or iron alone, but combines them.

It is especially in *diseases of the blood* that ferro-manganic medicines are useful. They have a special action on the vascular apparatus, on the formation of the blood, and on the circulating fluid itself. They do not act merely as tonics or astringents; but are regenerators of the blood. They have succeeded admirably in anæmia following hæmorrhage, operations, polypi, metrorrhagia, &c.; also in the chlorosis attending puberty, which is a more common disease than is generally supposed, and occurs even in males. M. Petrequin has also frequently found the combinations of iron with manganese of benefit in the diseases of women at the critical period. He has often seen, in these subjects, *metrorrhagia*, accompanied with an aspect of the surface which would lead to the suspicion of organic uterine disease: the hæmorrhage, however, was but a complication, and the patients, apparently in a hopeless state, have recovered under the use of ferro-manganic preparations, conjoined with tonics and ergotine.

In *amenorrhœa* and *dysmenorrhœa*, the patients often imagine that they require to be bled; but care must generally be taken not to comply with this request. M. Petrequin has more than once seen cases of amenorrhœa with severe chlorosis, in which it has not been desirable to hasten the appearance of the catamenia,—the consequent loss of blood aggravating the disease. The general state of health must here be carefully attended to. Œdema of the lower limbs sometimes occurs in

these cases; but it is a less severe complication than when it attends metrorrhagia. It often disappears, as the patient recovers, under the use of iron and manganese.

These medicines are no less efficacious in the treatment of *anæmia* resulting from prolonged intermittent fevers, prolonged suppuration, strumous, syphylitic, or cancerous affections, phthisis, &c. Pills and the syrup of the iodide of manganese and iron are preferable in these cases.

In all these cases, the ferro-manganic preparations do not merely act on the stomach and nervous system, but they are absorbed, and assist in the formation of hæmatosine and new blood-globules, so as to restore the blood to its normal condition. Their effect in this way is greater than that of iron alone.

In the *functional affections of the heart* connected with chlorosis and anæmia, and which must not be mistaken for organic disease, a combination of iron and manganese, with digitalis and other moderators of the heart's action, is advantageous. The same remark applies to the *functional disorders of the lungs,* attending the same constitutional states.

*Disordered states of the nervous system* are intimately connected with those of the blood. M. Petrequin has found that the ferro-manganic preparations succeed well in these, even though uncomplicated with chlorosis. He, as well as M. Gubian has observed that iron is here better tolerated when combined with manganese. He has also seen benefit from the use of iron with manganese in many cases of *dyspepsia, gastralgia,* and *gastro-enteralgia.* Nervous affections of the digestive organs are often the result of chlorosis; and, where stomachics and cinchona have failed, iron has often been found (especially the carbonate by some English physicians,) to be of service. Gastrodynia complicating chlorosis has often yielded to the use of ferro-manganiferous water, and to pills of carbonate of iron and manganese.

In *nervous affections connected with exhaustion,* from veneral excesses, onanism, rapid growth, &c., as well as in leucorrhœa, diabetes, &c., M. Petrequin has a high opinion of these medicines. He is continuing his researches on their action in certain cases of sterility from asthenia, and in some hyposthenic affections of the scalp, such as early baldness, alopecia, &c.

M. Petrequin has confined his observations to a limited number of the ferro-manganic preparations; and has made many observations before publishing the formulæ which he finds most useful. Having found, even at an early period, that the medicines were liable to adulteration, he has availed himself of the assistance of competent pharmaceutists. Since the publication of his first memoir, in 1849, these medicines have been extensively used in the south of France and in foreign countries.

The formulæ are few, and correspond to the preparations of iron generally used in France. They are. 1, *Pills* of carbonate of iron and manganese, or of iodide; 2 *Lozenges* of lactate of iron and manganese; 3, *Syrups* of lactate or of iodide of iron and manganese; 4 Ferro-manganic *chocolate;* 5 *Effervescing solution* of iron and manganese.

It has been observed that manganese not only preserves water, but purifies that which has undergone change (Martin-Lauzer). Ferro-manganic waters (of which there are many in France and other parts of the continent) can be preserved and carried to a distance;—which cannot generally be done with simple ferruginous waters.

M. Petrequin commences by giving the powder of iron and manganese, with some vinous drink; he then administers two pills daily, one before breakfast and one before dinner, replacing them soon by the lozenges. The syrups and chocolate complete the treatment. He gives the medicines at meal time. The syrup he gives before breakfast, in doses of a teaspoonful; and he finds it useful to administer directly after it some infusion of centaury, or of camomile flowers and orange.

Large doses are unnecessary and useless; for they are liable to produce irritation of the stomach and exhaustion of the nervous system; and the reparation of the blood is slow and progressive, and cannot, even were it desirable, be effected rapidly. Besides, the iron and manganese are not absorbed in any greater quantity, if large doses are given.

### PREPARATIONS OF MANGANESE AND IRON.

M. Burin-Dubuisson, of Lyons, who prepared most of the ferro-manganic combinations used by M. Petrequin has published an interesting *brochure,* in which he gives the necessary details relating to the subject. The following formulæ are extracted from it.

*Powder for Effervescing Solution of Manganese and Iron.*—Take of coarsely powdered bicarbonate of soda, 20 parts; tartaric acid, 25 parts; powdered sugar, 53 parts; finely powdered sulphate of iron, 1½ part; finely powdered sulphate of manganese, ¾ parts: mix carefully, and keep in well-stopped bottles. A teaspoonful is mixed with each glass of wine and water drunk during meal time.

*Pills of Carbonate of Iron and Manganese.*—Take of pure crystallised sulphate of Iron, 75 parts; pure crystallised sulphate of manganese, 25 parts; crystallised carbonate of soda, 120 parts; honey, 60 parts; water, a sufficient quantity. Pills of 20 centigrammes (3 grains) are made; they keep easily, without becoming oxidised, in well-closed vessels. From two to four are given daily.

*Ferro-Manganic Chocolate.*—One part of Carbonate of Iron and manganese is first mixed with four of sugar, and divided into large lozenges; of these, 100 parts (grammes) are mixed with 500 of chocolate paste, in the preparation of which 100 parts of sugar have been left out. This will make 800 lozenges, each of which contains about 3 centigrammes (nearly half a grain) of carbonate of iron and manganese. The chocolate decomposes the hydrated carbonate of manganese and iron of the saccharate into hydrated sesquioxide of iron and manganese; there is no metallic taste.

*Syrup of Lactate of Iron and Manganese.*—Take of lactate of iron and manganese, 4 parts; powdered sugar, 16 parts; rub together, and add of distilled water, 200 parts; dissolve rapidly, and pour into a matrass over a water-bath containing 384 parts of broken sugar: filter the solution. This syrup contains about 15 parts of lactate of iron and 5 of lactate of manganese in 3000 parts. One or two spoon-fuls are taken daily.

*Lozenges of Lactate of Iron and Manganese* are made by adding 20 parts of the lactate to 400 of fine sugar, with a sufficient quantity of water. The mass will make 840 lozenges; of which six or eight are taken daily.

*Syrup of Iodide of Iron and Manganese.*—M. Burin-Dubuisson forms a solution of iodide of iron and manganese, in the proportion of one part by weight to two of water; the proportion of the salts is about three of the iodide of iron to one of iodide of manganese: Six

parts of this are mixed with 294 of simple syrup; of this, M. Petrequin gives one or two spoonfuls daily.

*Pills of Iodide of Iron and Manganese.*—Take of the officinal solution prepared by M. Burin-Dubuisson, 16 parts (grammes); honey, 5 parts; some absorbent powder, 9½ parts. Divide into 100 pills. The honey and the solution are first mixed, and evaporated at first rapidly, than more slowly, to 10 parts. Then add the powder, and divide the mass into four parts, which must be rolled in powder of iron reduced by hydrogen; each of these must then be divided on an iron plate into 25 pills, and again rolled in the iron powder. Finally, they are covered with a layer of tolu according to M. Blancard's process.

All these preparations must be made very carefully. M. Burin-Dubuisson has ascertained that the commercial salts of manganese frequently contain copper, and even arsenic; he hence insists on the necessity of calcining the sulphate of manganese, twice, or more frequently, at a dark red heat, and of carefully testing the solution.—*Ibid.* *p.* 26.

---

## *On the Use of Nitric Acid in Hooping-Cough and Asthma.*

By Dr. T. C. T. Arnoldi.

(*Canada Medical Journal*, Aug.)

[Dr. Arnoldi recommends nitric acid as a powerful remedy in hooping cough and asthma:]

"In hooping cough," he says, "at whatever age, whether it be a child at the breast or a full-grown adult, I administer nitric acid in solution, as strong as lemon juice, sweetened *ab libitum*. I have given to a child of two years of age as much as one drachm and a half of concentrated nitric acid, in the above manner, per diem, and I have never known the disease to resist its use beyond three weeks. In one instance, that of a child at the breast, only seven months old, the disease disappeared within eight days. In another instance of a young lady fifteen years of age, the paroxysms were subdued within the first twenty-four hours, and the disease disappeared within ten days. Again, in the cases of two boys about ten years of age, living at a great distance from one another, who had had the cough for several weeks, and to such a violent degree that both of them had the circumference of their eyes ecchymosed, as though they had been pommelled in pugi-

listic combats, the acid acted positively like a miracle. A medical *confriere* of mine had four of his children severely affected with the same disease in the middle of winter; and, although they had to be kept indoors, owing to the inclemency of the weather, they were nevertheless all perfectly cured within three weeks. I might go on to cite a hundred similar instances, but these, I am satisfied, will prove sufficient to induce the profession to adopt this treatment. As regards asthma, the use of nitric acid has proved, not only in my own practice but in that of others who have adopted it, truly marvellous."

[In noticing Dr. Arnoldi's paper, the editor of the American Journal of Medical Science remarks, that the history of five cases of asthma, in which nitric acid was used successfully, was published in that journal by Dr. Hopkins, of Bethel, Georgia, in October, 1850.]—*Ibid. p.* 90.

---

*On the Treatment of Diarrhœa, Cholera, and Dysentery, by Sulphuric Acid;* by (1), Mr. EDGAR SHEPPARD, of Enfield; (2), Dr. MILLAR, of Stoke-Newington and (3), Mr. Cox, of Kensaltown.

(1. *Prov. Med. and Surg Journal*, Sept. 15. 2. *Lancet, Oct.* 9 and 16.)

[The experience of these gentlemen agrees with that of Mr. Griffiths, Mr. Cox, Dr. Fuller, and Mr. Buxton, as to the efficacy of this remedy under the above-named circumstances.]

1. "During the last six weeks, (says Mr. Sheppard,) I have seen upwards of fifty cases of diarrhœa, many of them severe, some few the very worst forms of English cholera. In only one instance have I witnessed the failure of the acid treatment, and in that instance the chalk and astringent treatment failed also. There was only this difference between the two systems:—the acid plan seemed to have no effect upon the disease, the chalk plan actually aggravated all the symptoms to a very frightful extent."

[He further adds:]

"The character of the epidemic which has been so prevalent in my neighbourhood, during the last six weeks, has been as follows:—Great prostration of the vital powers; severe griping and pinching pains in the bowels, (not invariable,) greatly aggravated by drinking anything hot, greatly relieved by cold; tongue generally dry and furred, occa-

sionally moist and red; distressing flatulence, the bowels being at times very much distended; burning thirst, and sensation of heat down the whole course of the alimentary canal, with (in some cases) incessant vomiting."

[Then follow five cases, of which the subjoined will serve as an example.]

"I. T—, seized on the morning of August 1st with violent pain in the bowels, with vomiting and purging—a most decided case of what is vulgarly called '*upwards and downwards.*' I was sent for about nine o'clock in the evening. He complained of intense pain, which had been greatly increased by his having swallowed, about half an hour previously, a cup of hot tea, although the stomach only retained it for about five minutes; pulse feeble, 120; tongue red and moist; feet cold; intense thirst and desire for cold water, which his friends would not let him have; had had about fifteen watery rice-coloured evacuations since the morning. Nothing would remain on the stomach. I immediately gave him a dose of the following mixture, which I had taken with me in my pocket, upon his wife's description of the case:—R. Sacchari Albi, dr. iv; Acid. Sulph. Dil., dr. ij; Tr. Cardamom Co., dr. iv; Aquæ Menth. Pip. ad., oz. vj; M. A fourth part to be taken every four hours.—The patient had no sooner swallowed the mixture than it returned. I then ordered some cold water fresh from the pump to be procured, when I allowed him to drink as much as he desired. He immediately swallowed three tumblerfuls, and expressed the most intense satisfaction. 'The burning heat,' he said, 'was quenched.' The pain immediately ceased. The sickness did not return. In about ten minutes' time I gave him another dose of the mixture, with a pill of calomel and opium, one grain each, and left him with directions to continue the mixture every four hours, and drink as much water as he wished. The following day I found my patient quite well. There had been no recurrence of either the vomiting or purging."

[Afterwards are these conclusions:]

"1st. Sulphuric acid in these cases is *more efficacious* than alkalies, opiates, and astringents, in a proportion greatly exceeding ten to one.

"2d. It is *more rapid* in its action, (especially in children), in a proportion greatly exceeding twenty to one.

"3d. It seems to act in a more rational and (if I may so express myself) scientific manner, by increasing the *tone* of the mucous membrane of the alimentary canal, rather than by simply astringing its pores.

"4th. The worse the case, the more rapid and marvellous seems to be the cure,—a most striking feature as compared with the treatment by chalk and opium.

"I would urge, in conclusion, upon my medical brethren, the desirableness of giving this system a fair trial; and I would, moreover, advise them, instead of giving the acid alone, with water, to combine it with a little sugar and (most rare and excellent of all tinctures) compound tincture of cardamoms, which seem greatly to relieve the so-frequent distressing flatulence. Unless the character of this autumnal epidemic should greatly alter, they will arrive at the conclusion, after having tested fairly the acid plan of treatment, that it does not admit of comparison, but only of *contrast*, with the olden system."

2. [Dr. Miller furnishes an abstract of 27 cases of diarrhœa, taken at random, as they occurred in ordinary practice. Some of these cases were extremely bad, and wanting little of the intensity of Asiatic cholera. Several of them were in infants. The mixture employed consisted of twenty minim doses of dilute sulphuric acid with the same quantity of compound tincture of cardamoms. The following two cases may serve as illustrations of the twenty-seven :]

"1. August 9th.—Mrs. W—'s infant, aged four months. When first called to this case, I found the child perfectly exhausted by diarrhœa and vomiting. She had been already ill three or four days; sunken eyes, and apparently very near death. The bowels were now constantly open, and there was continued sickness. I tried a variety of means until the 16th; I then commenced the dilute sulphuric acid. On the 17th the diarrhœa was much better; on the 20th the child was well.

"2. Sept. 22d.—Mrs. P—, æt. about 28; has had diarrhœa for three weeks, until she has become quite blanched; has had four actions since six o'clock this morning, and it is now only nine; pulse feeble; papillæ of tongue much elongated; pain in the loins and bowels; feet and legs swelling; she quite staggered from debility

when she left my house; she says her natural colour is florid.—Sept. 23d. She took three doses of the mixture, and the diarrhœa entirely ceased; her colour is already returning, and she says she has not been so well for these two months."

3. [Mr. Cox writes to substantiate his own claim to having first tried, in this country, sulphuric acid in cholera; and in the course of his communication a fact of considerable interest transpires—namely, that a celebrated Austrian remedy for cholera, which was analysed by Dr. Herepath, of Bristol, in 1851, (in 'Lancet,' August 9,) consisted mainly of sulphuric acid.]—*Ibid. p.* 99.

---

*On the Employment of Collodion, and of Collodion and Castor-Oil in the Treatment of Erysipelas;* by (1), Dr. PIAUCHAUD, of Geneva; and (2), M. GUERSANT.

(1. *Archieves Generales de Medicine.* 2 *Edinburgh Monthly Journal of Medical Sciences.*)

1. In twenty-two cases in which Dr. Piauchaud carried out the treatment of erysipelas by collodion, the effects were an immediate, or almost immediate, loss of redness, throbbing, tension, and heat. In a few seconds the skin changed into a yellowish glistening white, as if it had been varnished, and an agreeable sensation of cold resulted from the evaporation of the ether. Afterwards the coating of collodion gave rise to a feeling of constriction, like that of an overtight mask—a feeling, to a certain extent, disagreeable, but not amounting to actual pain.

In order to test the value of this mode of treatment the collodion was applied to half an erysipelatous face, the other half being left without any application, each half being, as nearly as possible, in the same condition. On the next day the varnished side had undergone a remarkable diminution in swelling and redness, and the sense of pain, throbbing, and heat had altogether disappeared; while the other side remained unchanged, or had changed for the worse. It was so also on the next day, and on the next. In a word, the erysipelas was permanently arrested on the one side, and passed through its usual course on the other.

Dr. Piauchaud also furnishes the following numerical particulars. Out of the 22 cases, 15 were instances of simple erysipelas, the rest being complicated in some manner, or imperfectly treated, or treated

with other applications at the same time. Of these 15, the face was affected in 11, the scalp in 1, the trunk in 3. In them all the mean duration was sixty days, or, in the other words, not half the usual duration of the complaint, according to M. Chomel. Indeed, this was the actual duration of those cases in which the treatment by collodion was not carried out.

2. [The following extract as to the effects of a combination of collodion and castor-oil in erysipelas, is copied from a recent number of the 'Edinburgh Monthly Journal of Medical Science.']

"M. Guersant has recently employed with advantage, in a severe case of erysipelas, an application to the skin, consisting of collodion in combination with castor-oil. The formula was—collodion, 30 parts; castor-oil, 2 parts, mix. This varnish was applied once on each of three successive days to the parts attacked by the exanthema, and caused the cessation of the burning pain, and the disappearance of the dark redness of the surface; the general symptoms seemed, at the same time, to be alleviated by some favorable influence, and the boy who was the subject of experiment became convalescent much sooner than had been expected.

"It is to M. Rubert Latour that the idea of mixing the collodion with castor-oil is due; but his formula is not the same as that employed by M. Guersant. To avoid the inconvenience of the splitting and scaling off of the collodion, and to prevent its exercising upon the inflamed parts a degree of pressure which some persons would find to be intolerable, M. Latour has proposed to add to the ordinary collodion a fifteenth part by weight of turpentine deprived of its volatile principle by evaporation, and five or six drops of castor-oil to every thirty grammes, (463 grs.) We have not seen this kind of collodion used; but as for that of M. Guersant, we are informed by himself that it forms a very soft covering, far superior in point of elasticity to ordinary collodion. It is besides, more easily detached, and a simple poultice suffices to remove it in pieces, without causing the slightest pain to the patient. The castor-oil is preferable to other oils, being more unctuous, and having less of drying quality."—*Ibid. p.* 122.

---

*On a New Styptic.* By M. Pagliari.

(*Gazette Medicale de Paris for* May 29 *and* June 5.)

This styptic forms the subject of a long communication to the

Academie des Sciences by C. Sedillox. Its composition is as follows: eight ounces of balsam of benzoin, one pound of sulphate of alumina and potass, and ten pounds of common water, are boiled for six hours in a glazed earthen vessel, care being taken to add fresh quantities of *boiling* water, so as to supply the loss in evaporation, and to stir continually. At the end of this time the supernatant liquid is separated from the undissolved benzoin, which has lost its odour and inflammability, and filtered and preserved in glass bottles. The liquid thus obtained is limpid, and of the colour of champagne; its taste slightly styptic, and its odour pleasant and aromatic, and when evaporated it leaves a transparent deposit on the sides of the vessel.

The styptic properties of this preparation seem very remarkable. A single drop immediately coagulates a cupping-glassful of blood, and a larger quantity (equal proportions) converts the blood into a firm and resisting solid. Applied to a wound, the hæmorrhage ceases almost immediately, in consequence, as it would seem, of the formation of such clots upon the orifices of the bleeding vessels. The application also produces no irritation and inconvenience, nor does it interfere in any way with the process of cicatrisation.

The cases given are well authenticated, and the results such as to leave no doubt as to the valuable styptic properties of the preparation. There are cases of obstinate primary and secondary hæmorrhage after surgical operations; one from a severe cut in the finger; some from the extraction of a tooth. In these cases a piece of lint was soaked in the styptic and bound upon the wound.—*Ibid. p.* 139.

---

*At what time after an Injury requiring Amputation ought the Operation to be performed?* By G. J. Guthrie, Esq. F. R. S. (The *Lancet for May* 1.)

[In a recent lecture, Mr. Guthrie proceeds as follows:]

"1. When the wound of an extremity is of so serious a nature as to preclude all hope of saving it by scientific treatment, that limb should be amputated as soon as possible.

"2. An amputation of the upper extremity may almost always be done from the shoulder-joint downwards, without much risk to life, and when necessary, the sooner it is done the better.

"3. An amputation of any part of the lower extremity below the

knee downwards may be done forthwith, with nearly an equal chance of freedom from any immediate danger, as of the upper extremity at or near the shoulder-joint.

"4. It is otherwise with amputations above the middle of the thigh, and up to the hip-joint. They are always attended by considerable danger.

"5. There can be no doubt that if the knife of the surgeon could in all cases follow the ball of the enemy, or the wheel of a railway carriage, and make a clean good stump instead of leaving a contused and ragged wound, it would be greatly to the advantage of the sufferer; but as this cannot be, and an approach to it even can rarely take place, the question naturally recurs.—At what distance of time after the receipt of the injury or accident can the operation be performed most advantageously for the patient?

6. "In order to answer this question distinctly, it should be considered with reference to two distinct states of injury:

"1st. When injuries require amputation of the arm below the shoulder-joint, or of the leg below the knee, these operations may be done at any time from the moment of infliction until the expiration of twelve or twenty-four hours, without any detriment being sustained by the sufferer with regard to his recovery; although every one, under such circumstances, must be desirous to have the operation over. The surgeon having several equally serious cases of injury of the head or trunk brought to him at the same time as two requiring amputation, may defer them more safely perhaps than the assistance he is also called upon to give to the other cases, the postponement of which may be attended with greater danger.

"2d. This state embraces those great injuries, in which the shoulder is carried away with some injury to the trunk, or the thigh is torn off at or above its middle, rendering an amputation of the upper third or at the hip-joint necessary; and it is this or nearly this state which alone implies a doubt as to the propriety of immediate amputation, and demands further investigation. It is the state to which attention is earnestly drawn for future observation.

"7. It has been implied, if not actually maintained, that a man could have his thigh carried away by a cannon-shot without being fully aware of it, or, if aware of it that it did not cause much alarm—in fact, that it did not materially signify as to his apprehension, whether

the ball took off his limb or the tail of his coat, or only grazed his breeches. An instance of this kind has not fallen under my observation.

"8. A surgeon on a field of battle can rarely have a patient brought to him, requiring amputation, under less time than from a quarter to half an hour; a surgeon in a ship may see his patient in less than five minutes after the receipt of the injury; and to the surgeons of the navy we must hereafter defer for their testimony as to the absence or presence of any constitutional alarm and shock; and if they occur, to what degree do they follow immediately after the receipt of such injury. The question must not be encumbered and mystified by a reference to all sorts of amputations after all sorts of injuries, but to the one especial injury—viz., and that of the *upper half of the thigh*.

"9. My experience, which may be erroneous, like everything human, has taught me, that when a thigh is torn, or nearly torn off, by a cannon-shot, there is always more or less loss of blood, suddenly discharged, and which soon ceases in death, or in a state approaching to syncope. When the great artery is torn, this fainting saves life, for an artery of the magnitude of the common femoral does not close its canal by retracting and contracting, as a smaller vessel does; it can only diminish it; and the formation of an external coagulum is necessary to preserve life, which the shock, alarm, and fainting, by taking off the force of the circulation, aid in forming; and without which the patient would bleed to death. An amputation, in this state of extreme depression, might destroy life.

"10. If the cannon-shot, or other instrument capable of crushing the upper part of a thigh, should not divide the principal artery, and the sufferer should not bleed, it is possible he may be in the state alluded to, in which the patient, for he may not be called sufferer, is said to be just as composed as if he had only lost a portion of his breeches. Nevertheless, few have seen a man lose even a piece of his breeches by a cannon-shot, without perceiving that he was indisputably frightened.

"11. Whilst some persons, under the loss of a limb high up, are reduced to a state of syncope, or nearly approaching to it, which renders them almost, or even entirely, speechless; others suffer extreme pain, and earnestly entreat assistance, under which circumstances, amputation should be performed forthwith. In the former, the adminis-

tration of stimulants may render the operation less immediately dangerous.

"12. Chloroform, or other similar remedies, may produce an effect in such cases yet unknown. Its careful administration may not destroy the ebbing powers of life, and may render an amputation practicable, which could not otherwise be performed without the greatest danger. It may be otherwise; the point, however, is to be ascertained although in all cases of great suffering its use should be unhesitatingly adopted.

"13. When the sufferer is brought to the surgeon at the end of half an hour, having lost a limb below the thigh or shoulder, by a cannon-shot, he will often be found in a state of such great depression, as to be likely to be destroyed by the infliction of a serious and painful operation like amputation. This has occurred to me so often, as to induce me to recommend delay for five, six, or even eight hours, if the unfortunate person did not suffer much, and appeared likely to be revived by the proper use of stimulants.

14. "This recommendation originated from the fact, that as one seriously wounded man has as much claim as another to the attention of the surgeon, all could not be attended to at the same time; and the success following the deferred cases of amputation was as great, if not greater, than on those on which the operation was more immediately performed.

"15. The advantageous results of *primary* amputations, or those done within the first twenty-four, or at most forty-eight hours, over *secondary* amputations, or those done at the end of several days, or three or four weeks, has been so firmly and fully established, as to admit no longer of dispute.

"16. When an amputation is deferred to the secondary period, a joint is often lost. A leg which might have been cut off below the knee in the first instance, is frequently obliged to be removed above the knee when done in the second.

"17. In the secondary period after great injuries, the areolar and muscular textures near the part injured are often unhealthy, the bones are in many instances inflamed internally, and their periosteal membranes deposit on the surrounding parts so much new ossific matter, as frequently to envelop in a few days the ligatures on the

vessels, and render them immovable, necrosis of the extremity of the bone following as a necessary consequence, protracting the cure for months.

"18. Sloughing of the stump, accompanied by inflammation of the vein or veins leading to the cava, frequently take place. This state of stump is often followed by purulent deposits in and upon the different viscera, and principally in the cavities of the chest. Where febrile diseases are endemic, they often prevail; the constitutional irritation is great; the stumps do not unite, or open out if apparently united and slough, and frequently after a few days implicate the veins." —*Ibid. p.* 157.

---

### *Final Cause of Menstruation.*

*(Medical Times and Gazette, Jan.* 17, 1852.)

Dr. F. Ramsbotham has published a short paper enunciating views which have given rise to considerable discussion. He admits to the fullest extent the ovular theory of Bischoff and Pouchet; but, in addition, he propounds the hypothesis, that the menstrual secretion and the decidua are convertible phenomena, the one or the other occurring according as impregnation does or does not take place. This identity of the two products, he thinks is established by the following considerations:—

An ovule, he observes, ripe for impregnation, parts from the ovarium and is grasped by the Fallopian fimbriæ. At the same time, nature establishes an action in the uterus for the purpose of preserving it, provided it becomes impregnated. In this case the fluid formed is retained in the uterus, and becomes gradually converted into deciduous membrane. If, on the contrary, for want of impregnation the ovule perishes, then this fluid, being no longer required, is allowed to pass away and becomes the menstrual fluid.

This view, the author thinks, is strengthened by the fact, that the menstrual fluid and the decidua seem both to be the product of the same tubular glands; that the decidua, when first formed, is a viscid fluid; and that, in dysmenorrhœa, a membrane is not unfrequently formed in the virgin uterus, which has very much the external characters of decidua; that those females who menstruate regularly or painfully, are not so obnoxious to pregnancy as those in whom the

function is normally performed ; and that in lower animals, in which there is no menstruation, there is no decidious membrane.—*Ibid. p.* 350.

---

## Literature.

(Animal Kingdom, by Baron Georges Cuvier.)

*Of Living Beings, and of Organization in general.*

If, in order to obtain a just idea of the essence of life, we consider it in those beings in which its effects are the most simple, we readily perceive that it consists in the faculty which certain corporeal combinations have, of enduring for a time, and under a determinate form, by incessantly attracting into their composition a part of surrounding substances, and rendering to the elements portions of their own proper substance.

Life, then, is a vortex (*tourbillon*), more or less rapid, more or less complicated, the direction of which is constant, and which always carries along molecules of the same kind, but into which individual molecules are continually entering, and from which they are constantly departing ; so that the *form* of a living body is more essential to it than its *matter*.

As long as this movement subsists, the body in which it takes place is *living—it lives*. When it is permanently arrested, the body *dies*. After death, the elements which compose it, abandoned to the ordinary chemical affinities, are not slow to separate, from which, more or less quickly, results the dissolution of the body that had been living. It was then by the vital motion that its dissolution was arrested, and that the elements of the body were temporarily combined.

All living bodies die after a time, the extreme limit of which is determined for each species ; and death appears to be a necessary consequence of life, which, by its own action, insensibly alters the structure of the body wherein its functions are exercised, so as to render its continuance impossible.

In fact, the living body undergoes gradual but constant changes during the whole term of its existence. It increases first in dimensions, according to the proportions and within the limits fixed for each species, and for each of its several parts ; then it augments

in density, in most of its parts :—it is this second kind of change that appears to be the cause of natural death.

On examining the various living bodies more closely, a common structure is discerned, which a little reflection soon causes us to adjudge as essential to a vortex, such as a vital motion.

Solids it is evident, are necessary to these bodies for the maintenance of their forms, and fluids for the conservation of motion in them. Their tissue, then, is composed of interlacement and network, or of fibres and solid laminæ, which inclose the liquids in their interstices : it is in these liquids that the motion is most continual and most extended ; the extraneous substances penetrate the intimate tissue of bodies in incorporating with them ; they nourish the solids by interposing their molecules : and also detach from them their superfluous molecules : it is in a liquid or gaseous form that the matters to be exhaled traverse the poles of the living body ; but, in return, it is to the solids which contain these fluids, and by their contraction communicate to them a part of their motion.

This mutual action of the solids and fluids, this passage of molecules from one to the other, necessitated considerable affinity in their chemical composition ; and, accordingly, the solids of organized bodies are in great part composed of elements easily convertible into liquids or gases.

The motion of the fluids, requiring also a continually repeated action on the part of the solids, and communicating one to them, demanded of the latter both flexibility and dilatability ; and hence we find this character nearly general in all organized solids.

This fundamental structure, common to all living bodies—this areolar tissue, the more or less flexible fibres or laminæ of which intercept fluids more or less abundant—constitutes what is termed the *organization* : and, as a consequence of what we have said, it follows that only organized bodies can enjoy life.

Organization, then, results from a great number of dispositions or arrangements, which are all conditions of life ; and it is easy to conceive that the general movement of the life would be arrested, if its effect be to alter either of these conditions, so as to arrest even one of the partial motions of which it is composed.

Every organized body, besides the qualities common to its tissue,

has one proper form, not only in general and externally, but also in the detail of the structure of each of its parts; and it is upon this form, which determines the particular direction of each of the partial movements that take place in it, that depends the complication of the general movement of its life, which constitutes its species, and renders it what it is. Each part concurs in this general movement by a peculiar action, and experiences from it particular effects; so that, in every being, the life is a whole, resulting from the mutual action and reaction of all its parts.

Life, then, in general, presupposes organization in general, and the life proper to each being presupposes the organization peculiar to that being, just as the movement of a clock presupposes the clock; and, accordingly, we behold life only in beings that are organized and formed to enjoy it; and all the efforts of philosophers have not yet been able to discover matter in the act of organization, either of itself or by any extrinsic cause. In fact, life exercising upon the elements which at every instant form part of the living body, and upon those which it attracts to it, an action contrary to that which would be produced without it by the usual chemical affinities, it is inconsistent to suppose that it can itself be produced by these affinities, and yet we know of no other power in nature capable of reuniting previously separated molecules.

The birth of organized beings is, therefore, the greatest mystery of the organic economy and of all nature; we see them developed, but never being formed; nay, more, all those of which we can trace the origin, have at first been attached to a body of the same form as their own, but which was developed before them;—in one word, to a *parent*. So long as the offspring has no independent life, but participates in that of its parent, it is called a *germ*.

The place to which the germ is attached, and the occasional cause which detaches it, and gives it an independent life, vary; but the primitive adherence to a similar being is a rule without exception. The separation of the germ is what is designated *generation*.

All organized beings produce similar ones, otherwise, death being a necessary consequence of life, their species would not endure.

Organized beings have even the faculty of reproducing, in degrees

varying with the species, certain of their parts of which they may have been deprived. This has been named the power of *reproduction*.

The developement of organized beings is more or less rapid, and more or less extended, according as circumstances are differently favourable. Heat, the supply and quantity of nourishment, with other causes, exert great influence ; and this influence may extend to the whole body in general, or to certain organs in particular :—hence the similitude of offspring to their parents can never be complete. Differences of this kind, between organized beings, are what are termed *varieties*.

There is no proof that all the differences which now distinguish organized beings are such as may have been produced by circumstances. All that has been advanced upon this subject is hypothetical: experience seems to show, on the contrary, that, in the actual state of things, varieties are confined within rather narrow limits ; and, so far as we can retrace antiquity, we perceive that these limits were the same as at present.

We are then obliged to admit of certain forms, which, since the origin of things, have been perpetuated without exceeding these limits : and all the beings appertaining to one of these forms constitute what is termed a *species*. Varieties are accidental subdivisions of species.

Generation being the only means of ascertaining the limits to which varieties may extend, species should be defined *the reunion of individuals descended one from the other, or from common parents, or from such as resemble them as closely as they resemble each other ;* but, although this definition is rigorous, it will be seen that its application to particular individuals may be very difficult when the necessary experiments have not been made.

[ " That insurmountable difficulties oppose the rigid determination of species, and consequently, render even the definition of the term impossible, except in a very vague and loose manner, will readily appear on consideration of some of the phenomena presented. The prevalent idea is, that a species consists of the aggregate of individuals descended from one original parentage, which alone are supposed to be capable of producing offspring that are prolific *inter se*, and that when individuals, not of the same pristine derivation, interbreed, the

hybrids are necessarily *mules*, which are either quite sterile, or at most can only propagate with individuals of unmixed descent. But it so happens, that every possible grade of approximation is manifested, from the most diverse races, to those which are utterly undistinguishable; while even in the latter case, urgent analogies, notwithstanding, sometimes forcibly indicate a separateness of origin; as when a series of analogous races inhabiting distant regions are compared together, some of which are obviously different, others doubtfully so, and some apparently identical. And it remains to be shown whether such intimately allied races as some of these, even if not descended from a common stock, (which of course cannot be ascertained), would not produce hybrids capable of transmitting and perpetuating the mingled breed. It is true that Cuvier guards against this contingency, in the wording of his definition; and that most naturalists would concur in regarding such miscible races, however dissimilar, as *varieties* merely of the same; but a question arises, whether there be not *different degrees* of fertility in hybrids, corresponding to the amount of *affinity*, or physiological accordancy, subsisting between the parent races; it being only within a certain sphere of that affinity that they can be produced at all: besides which, as hybrids are seldom exactly intermediate, and in some instances (particularly among multifarous races) have been known to resemble entirely one or the other parent, it may be presumed that this circumstance would also materially affect their capability of propagation. Experiments are needed to solve this important problem, though there is every reason to suspect that the following proposition will eventually gain the general assent of naturalists, viz., *that while considerable dissimilarity does not of necessity imply specifical diversity, the converse equally holds, that absolute resemblance fails itself to constitute special identity.*"—W. B. CARPENTER AND J. O. WESTWOOD.]

To recapitulate,—absorption, assimilation, exhalation, developement, and generation, are the functions common to all living beings; birth and death, the universal limits of their existence; a porous, contractile tissue, containing within its laminæ liquids or gases in motion, the general essence of their structure; substances almost all susceptible of being converted into liquids or gases, and combinations capable of easy transformation into one another, the basis of their chemical composition. Fixed forms, and which are perpetuated by generation, distinguish their species, determine the complication of the secondary functions proper to each of them, and assign to them the office they have to fulfil in the grand scheme of the universe. These forms neither produce nor change themselves; the life supposes their existence; it can exist only in organizations already prepared; and the most profound meditations, assisted by the most delicate observa-

tions, can penetrate no further than the mystery of the pre-existence of germs.

*Division of Organized Beings into Animals and Vegetables.*

Living or organized beings have been subdivided, from the earliest times, into *animate beings,* or those possessing sense and motion, and *inanimate beings,* which enjoy neither the one or the other of these faculties, but are reduced to the simple function of vegetating. Although many plants retract their leaves when touched, and the roots direct themselves constantly towards moisture, the leaves towards air and light, and though some parts of vegetables appear even to exhibit oscillations without any perceptible external cause, still these various movements bear too little resemblance to those of animals to enable us to recognize in them any proofs of perception or of will.

The spontaneity of the movements of animals required essential modifications, even in their simply vegetative organs. Their roots not penetrating the ground, it was necessary that they should be able to place within themselves provisions of food, and to carry its reservoir along with them. Hence is derived the first character of animals, or their alimentary cavity, from which their nutritive fluid penetrates all other parts through pores or vessels, which are a sort of internal roots.

The organization of this cavity and of its appurtenances required varying, according to the nature of the aliment, and the operations which it had to undergo before it could furnish juices proper for absorption : whilst the atmosphere and the earth supply to vegetables only juices ready prepared, and which can be absorbed immediately.

The animal body, which abounds with functions more numerous and more varied than in the plant, required in consequence to have an organization much more complicated; besides which, its parts not being capable of preserving a fixed relative position, there were no means by which the motion of their fluids could be produced by external causes, as it required to be independent of heat and of the atmosphere: from this originates the second character of animals, or their circulatory system, which is less essential than the digestive, since it was unnecssary in the more simple animals.

The animal functions required organic systems, not needed by vegetables, as that of the muscles for voluntary motion, and that of the

nerves for sensibility; and these two systems, like the rest, acting only through the motions and transformations of the fluids, it was necessary that these should be more numerous in animals, and that the chemical composition of the animal body should be more complicated than that of the plant: and so it is, for an additional substance (azote) enters into it as an essential element, while in plants it is a mere accidental junction with the three other general elements of organization,—oxygen, hydrogen, and carbon. This then is the third character of animals.

The soil and the atmosphere supply to vegetables water for their nutrition, which is composed of oxygen and hydrogen, air, which contains oxygen and azote, and carbonic acid, which is a combination of oxygen and carbon. To extract from these elements their proper composition, it was necessary that they should retain the hydrogen and carbon, exhale the superfluous oxygen, and absorb little or no azote. Such, then, is the process of vegetable life, of which the essential function is the exhalation of oxygen, which is effected through the agency of light.

Animals in addition derive nourishment, more or less immediately, from the vegetable itself, of which hydrogen and carbon form the principal constituents. To assimilate them to their own composition, they must get rid of the superfluous hydrogen, and especially of the superabundant carbon, and accumulate more azote; this it is which is performed in respiration, by means of the oxygen of the atmosphere combining with the hydrogen and carbon of the blood, and being exhaled with them under the form of water and carbonic acid. The azote, whatever part of their body it may penetrate, appears to remain there.

The relations of vegetables and animals with the atmosphere are then inverse, the former retain (*défont*) water and [decompose] carbonic acid, while the latter reproduce them. Respiration is the function essential to the constitution of an animal body; it is that which in a manner animalizes it; and we shall see that animals exercise their peculiar functions more completely, according as they enjoy greater powers of respiration. It is in this difference of relations that the fourth character of animals consists.

(*To be continued.*)

# Obituary.

Assistant Apothecary J. Dean, died at Madras on the 16th May, 1853, after a few days' illness with fever. The distemper was a relapse of jungle fever, which he caught while on duty in the Malabar Coast. His death was rather sudden. He was found a corpse in his bed during the night, his family supposing that he was asleep. Too soon was the fatal event disclosed, which left a widow and seven children disconsolate, to bemoan the loss of one dear to them. He was esteemed by all who knew him, and was of very respectful deportment. It would appear that the immediate cause of his death was the result of congestion of the Brain, or of Apoplexy.

Assistant Apothecary C. Cole, died of brain fever in Burmah, on 13th March, 1853. The disease was contracted in the pestilential marshes of that country. He embarked for foreign service with the Expeditionary force, which left Madras for Burmah, on the 31st March, 1853; he left a widow and three children.

Assistant Apothecary D. Gorman, died at Masulipatam on the 18th May, 1853; He was for sometime past ailing with affection of the liver, and general derangement of health. A widow and three children bemoan his loss.

# THE

# MADRAS JOURNAL

## OF

# MEDICAL SCIENCE.

"I hold every man a debtor to his profession from the which as men doe seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends, to be a help thereunto."—Lord Bacon.

## Original Communications.

*Case of bite from Cobras,—failure of charms.—Death.*— By Assistant Apothecary J. Martin.

The following account of the fatal termination of a case from the bite of snakes, will not be read without interest. The case contains nothing of any practical value regarding the treatment to be pursued in bites from poisonous reptiles, nor do I profess to know any plan of cure, beyond that which is usually resorted to, in the treatment of such cases. Many no doubt have heard of the charms and incantations practised by the natives of this country, for the recovery of those who have been bitten by snakes, or who lie moribund from the influence of the poison of venomous reptiles. This practise, prevailed in India from time immemorial, and from the discordant accounts given, it does not appear certain whether any real cures have been effected by so novel a method. The books on Hindu Medicine are so mixed up with fable, that it is difficult to separate the wheat from the chaff; little reliance, therefore, can be placed on mere hear-say; the only sure guide in such cases is, to *see*, and *believe*. It is for the purpose of drawing attention to the failure of charms witnessed by me in the case under notice, that I pen it for publication.

The record of facts in difficult cases is of value, inasmuch it serves as an important guide in practice, and by the judicious use of such facts much error and misconception might be avoided; but, in order that facts should subserve this end, they ought to be of a trustworthy character.

On the morning of the 10th instant, at about 8 o'clock, a sepoy of the 38th N. I., was bitten by two *Cobras de capello*. Before entering into the particulars of the case, I might as well mention, that the sepoy had the reputation in the Regiment of being acquainted with the cure for snake bite. He was never, I believe, without a snake in his hut; he confined the animal in a basket, as the snake people in this country are accustomed to do. He was occasionally seen feeding one of these creatures with eggs and milk, a practise not uncommon in the east. His object in rearing snakes was to exhilirate himself by drinking their venom, whenever he could afford to do so. He mentioned to me that he was in the habit of doing this, with the view of ascertaining how much of the venom would intoxicate him. I saw him in the state of pleasurable excitement twice, and on each occasion he attributed it to the influence above mentioned. The excitement produced did not render him unfit for the discharge of his duties as a sepoy, a purgative sufficed to recover him from the reveries in which he indulged, and which were brought about in so strange a way.

The circumstances of the case are as follows:—On the morning referred to, Syed Lall, the deceased, was called to a pigeon house, where a Cobra had taken up its abode, and was feeding on the eggs and young of these birds. The Cobra was fearlessly seized and carried away by Syed Lall, for the purpose of adding it to his stock. On opening the basket which contained an old Cobra in his house, the one just caught was thrust into it, this it would appear was not relished by the old one, and a fight ensued between them. Syed Lall attempted to separate the infuriated pair, and in striving to do so, he was severely bitten in two or three places on the thumb of the right hand. A portion of skin was removed from the back of the first phalanx of the thumb, and several punctures were seen near the distal end of its metacarpal bone. What was done immediately after the receipt of the injury by him or his friends in the lines, to counteract any bad effects I could not ascertain. He was brought to Hospital at half past eleven o'clock, three and a half hours after he met with the accident, which proved fatal to him. He was in a moribund state. The right hand was swollen as far as the wrist, and the swelling extended in a less degree to the

elbow of the arm. On the abraded part of the thumb was applied some root ground into a paste, and kept on by a piece of cloth, and on one of the punctures was a yellow-looking substance resembling a stone ; these applications were done in his house. (The name of the root as well as of the stone I will hereafter send, giving full particulars of these substances). His body was quite cold ; cutaneous transpiration very slight. His pulse was very low, extremely small and quick ; soon after it ceased to be perceptible. The mouth was closed ; some folds of a handkerchief were inserted between the teeth, with the view I suppose of preventing any injury to his tongue ; this was done by some one in the lines. There was no froth from the mouth that I could observe. The countenance was natural in appearance, quiet and undisturbed. Pupils dilated and fixed ; breathing scarcely audible. Under this state of things it was clear that the case was too far gone to admit of recovery. The treatment was as follows :—An incision with the point of a bleeding lancet was made beyond the seat of the injury, it gave exit to a small quantity of limpid serum, no blood whatever escaped. The stomach pump was employed, and two scruples of sulphate of zinc in solution with a considerable quantity of warm water, was pumped into the stomach, the action of the instrument was then reversed, and the organ emptied. Very shortly after this, the patient expired without a struggle

The body was permitted to be removed from hospital by the Medical Officer of the Corps. The friends of the deceased now having the body to themselves, and placing faith in charms, had recourse to this means of cure. I had the curiosity to go and witness the ceremony. To give a faithful description or account of all what was said and done on the occasion by the charmers is more than I am able accurately to do. The most discordant sounds or yells were uttered by the charmers in practising their incantations, the noise of the natives present added thereto, made me fancy that I was in some large native market place, where disorder, confusion, and riot prevail. The body of the deceased, who fell a victim to his temerity, was supported in the upright posture, resting on its feet ; the number of charmers engaged in restoring the dead to life was six. They sang out what they had to say as quick as they could, and concluded in a long, loud, and shrill tone of voice. I heard the word " Oh !" uttered. Immediately after, each charmer in turn, blew strongly into the ears and mouth of the corpse ; this was repeated after a while. I remained with them for an hour, and then departed. My opinion of

the charming process is, that *artificial respiration* is had recourse to, and should there be the least spark of life in the body, and the effects of the poison wear away, life may be resuscitated. The charmers, however, failed in their efforts to reanimate the body.

Artificial respiration should always in such cases be fairly tried.

The snakes were killed next morning by a sepoy, in my presence.

[The propriety of the treatment adopted in this case does not appear very obvious. We cannot conceive with what view an emetic was pumped into the stomach, and immediately after pumped out again: surely it could not be for the purpose of removing offending matters from that organ, none such is shown to have existed: nor could it have been for the purpose of diluting the poison, as that is absorbed by the veins, and enters into the general circulation; the blood being thereby contaminated ceases to animate the vital functions, and life flags. The action of the heart becomes enfeebled for the want of sufficient nervous energy; the brain, deprived of its natural stimulus (a due proportion of healthy arterial blood), no longer imparts the necessary stimulus for the performance of the functions which constitute life. Coma, in some cases preceded by convulsions takes place as a natural consequence; the muscles of the frame become paralyzed, respiration ceases, and life becomes extinct. In those cases where recovery takes place, the poison becomes exhausted, or is carried off by the natural emunctories, by perspiration &c., before dissolution occurs, and the functions then gradually assume their accustomed vigor. When the poison has been absorbed, and the deleterious symptoms usual in such cases have been established, our object ought to be to sustain the powers of life. The internal administration of stimulants is useful. *Eau-de-luce*, consisting of ammonia and essential oils, given in repeated doses, is said to have been efficacious, brandy and water, and the external application of heat, are all good adjuvants in resuscitating life. Where the individual cannot swallow, medicines may be introduced into the stomach by means of the stomach pump. Caustic, or what is perhaps better, strong nitric acid applied to the bitten parts is useful, the whole may be afterwards covered with a poultice, a poultice made of ipecacuanha powder is said to have been efficacious. Previous to applying the caustic &c., the wound may be bathed with tepid water and sucked. The person sucking the wound should take care, that the mucous membrane of his

mouth is entire, and that there are no recent abrasions in it. All these remedies of course can only be useful, when the powers of life have not receded too far to admit of recovery.

In cases where the bite is situated on a finger or toe, if the person bitten has the presence of mind, he would do well to put a tight ligature round the part, so as to exclude it from the general current of the circulation, and thus prevent the poison from being absorbed into the system. Excission of the finger or toe may then be had recourse to. A ligature may also be applied around a member of the body, such as an arm or leg, when these places are the seat of the bite, the wound can afterwards be bathed, sucked, and either caustic or nitric acid applied to it, or the wound may be cauterised. In cases of this kind, it is not possible to prevent effectually the poison from being absorbed, on account of the bulk of the soft parts included in the ligature, and the numerous anastomoses of vessels connected with them. It must further be observed, that a ligature applied around a limb, so as to obstruct the circulation from the distal portion of it, cannot be kept on for any length of time without causing serious injury, as mortification would take place. Where medical assistance is within reach, ligatures around the limbs are not likely to be followed by injurious consequences. In all cases, the ligature should be so applied as to be situated between the wound and heart.—Ed.]

---

*Hypertrophy and Prolapse of the neck of the Uterus, with Premature Labor.* [Communicated by a Medical Subordinate.]

*8th August* 1852.—A native woman, 38 years of age, in her second pregnancy. Has been under treatment for hypertrophy of the neck of the uterus. Is advanced 6 months in pregnancy, and felt labor pains since noon yesterday.

The neck of the uterus occupies the vaginal orifice, forming a tumor externally of the size of a large orange ; the surface of the tumor is abraded in several parts, the abrasions were caused by friction ; the tumor is divided into two unequal lobes, which mark the situation of the os uteri ; it is not reducible. Previous to the coming on of the labor pains, the os barely admitted the introduction of the forefinger, but it does so now with ease ; the passage is moist, the kind of presentation is not ascertainable as yet ; the liquor amnii was discharged last evening ; the contractions of the fœtal heart are distinctly heard ; pains regular, but feeble.

The account the patient gave of her case is as follows. About five years ago, after confinement, a native midwife who attend-

ed her, in attempting to remove the placenta which was retained, seized the neck of the uterus which she mistook for the placenta, and dragged it down with violence. When the mistake was discovered, she did not return the displaced organ. The neck of the uterus was allowed to remain exposed externally; it inflamed, and after a few days, when the inflammation subsided, the neck of the uterus returned of itself to its natural situation. She was not troubled again with a prolapse of the organ, until about the fifth month of the present pregnancy, when the neck of the uterus descended a second time, and increased in size; she experienced no pain in its descent.

In the evening, the examination of the os was renewed, it was found more dilated, and the breech presentation was in progress; size of the tumor not perceptibly altered; pains slight; there was a discharge of bloody fluid; pulse frequent but weak; skin cool.

The fœtus being within reach, and of small size, it was extracted without difficulty by hooking a finger upon its groin. The body of the uterus descended along with the child, yielding to the force used in the extraction; it was kept up by firmly pressing one hand against the womb, whilst the extraction of the child was continued with the other.

The child was born alive, and made feeble efforts *to respire*; but it died five minutes after the placenta was discharged. No hœmorrhage followed the expulsion of the placenta; pulse weak but regular. Prescribed Brandy ℥ ii; which was given in a little water.

℞ Liquoris opii sedativi ʒ ss.

Camphor: misturæ ℥ i. M. To be taken at bed time.

*August 9th.* —Slept well, feels easy, pulse good. To have fomentations and a poultice applied to the tumor.

*August 11th.*—Had rigors last evening, followed by heat of skin, the feverish symptoms subsided during the early part of the night; Pulse 88, skin cool this morning. Slept sound.

Took the following medicines last night.

℞ Calomel gr. v., opii gr. i., Antimon. Potas. Tart. gr. ¼ M. ft. pil.—Pediluvium.

To have this morning castor oil, ℥ i.

*Vespere.*—Pulse 120, has feverish heat of skin, though she is not apparently sensible of it. Breasts full, but not painful; no abdominal uneasiness, lochial discharge free, and of good appearance; tumor inflamed.

Continue the poultice.—To have saline diaphoretic mixture during the day, and a foot bath at night.

*August 12th.*—Passed a comfortable night, no complaint this morning ; pulse 108, skin cool.

Continue fomentations and poultice.

*August 15th.*—Doing well, tumor diminishing.

Continue the remedies.

*August 24th.*—The tumor is diminished to half its former bulk, and is reducible ; no discharge ; she is gaining strength.

The tumor was reduced, and the uterus kept in position by means of a sponge pessary and bandage ; the patient was directed to confine herself to bed.

*Sept. 2nd.*—Is getting strong and moves about, the tumor is not more than one fourth of its original size.

*Oct. 16th.*—Tumor has disappeared altogether, and is not observable even when she moves about without the use of the pessary, her general health is good. She was discharged, but directed to continue the use of the pessary.

*Remarks.*—The circumstance worthy of notice in this case is, that the woman should have conceived after she sustained so severe an injury to the neck of the womb.

The possibility of an incorrect diagnosis in a case of this kind is not to be overlooked. The hypertrophied neck might have been mistaken for a morbid growth, and should an operation have been undertaken for its removal, it would doubtless have been followed by serious consequences.

Excision of the neck of the uterus, has it is true, been performed, I will here quote what has been written on the subject.

" It has been shown by M. Pauly that his (M. Lisfranc's,) operations were fewer in number than was asserted, and that, *so far from being safe or successful*, several died within 24 hours, and more than two-thirds were ultimately lost. In consequence of this discovery, the operation is regarded with suspicion. The feelings of the most judicious practitioners are decidedly against it.

" In the opinion of M. Pauly (the Editor of Lisfranc's work), of all surgicial operations, the excision of the neck of the womb, has hitherto been one of the most murderous." *(Churchill's diseases of Females.)*

To arrive at a correct diagnosis in this case, there was at once a safe guide, as the os uteri was found in the fissure on the

left side of the tumor. That the tumor was the neck of the uterus was made evident, by the finger being passed around its narrow part or neck, it entered the vagina but a little way, and was arrested by the termination of that canal.

There was some risk attending the extraction of the fœtus, though it was small, on account of the resistance and support of the soft parts being lost, the uterus descending out of its position in consequence.

It was interesting to observe that a fœtus, 6 months old should have breathed, though the attempts at respiration were feeble and lasted but for a few minutes.

---

*On the preparation of Carbonate of Soda from Dhoby's Earth.*—By Assistant Apothecary G. Norton.

In several parts of India, both in the northern and southern provinces, an impure carbonate of soda is found as a natural product. It exists at the surface of the soil in large quantity, in the Doab, in Mysore, and in Travancore. It is said to be procurable in districts not far from Madras. As a natural product, carbonate of soda is not confined to India, it also exists in Egypt, Spain, Germany, and other localities, in a state somewhat similar to that in which it is found in India. It was known to the ancients by the name of *natron*. In India it is known by the popular epithets of *Sági mati* (hindostanee), *Carum munnoo* (tamil)—*dhoby's earth* (English). The primary source of soda and its salts in the mineral kingdom is from the detritus of the primitive rocks, Potash and its salts are also derived from the same original source. The other salts of soda, found in nature in quantity are the nitrate, or Chilian saltpetre, called also cubic nitre, in contradistinction to its allied compound nitrate of potash, ordinarily termed nitre, and which is of a prismatic form. Cubic nitre abounds in South America; prismatic nitre in the East Indies. Borax (Biborate of soda), the tincal of commerce, is another natural compound of soda, obtained from the lakes of Thibet. At third natural compound of soda is common salt, (chloride of sodium), which Almighty wisdom has treasured up in the bowels of the earth (rock-salt) for the use of man; the great emporium of this compound is sea water, which contains about 2 or 3 per cent. of chloride of sodium, and is accessible to nearly all nations. A forth compound of soda found in quantity in nature is the sulphate (glauberite).

The present paper will be devoted to considering the preparation of carbonate of soda from the crude earth, and a brief notice will be taken of some of the applications of which it admits.

There are two samples of the crude earth sold in the Bazar at Madras ; one is in nodular masses, of a whitish brown color ; the second kind is in powder, and is darker in appearance ; the former is superior to the latter in quality. To obtain the Carbonate from the first variety, I employed the following process.

Six measures of the crude earth, weighing 13 pounds avoirdupois, were digested for some hours with three gallons of boiling water, and a dark brown solution which was obtained was cast upon a cloth strainer. The residual earth was digested a second time with half as much boiling water, and the fluid strained into the first portion : there remained sand with a mixture of clay which was rejected. The strained liquor was evaporated in a porcelain basin,(iron vessels are the best for this purpose, and should always be used where procurable). The evaporation was continued until a pellicle formed on the surface ; the vessel was afterwards set aside ; a copious quantity of crystals separated. These were collected, and the mother liquor was set to evaporate again, a further crop of crystals was obtained from it. The crystals were dried in an iron saucepan, and afterwards transferred into an iron crucible, and the latter subjected to a red heat. This was done for the purpose of destroying the organic matter which adhered to the crystals, and which the crude earth contains to a greater or less degree, the organic matter being soluble in the carbonated alkali. By a red heat the organic matter was burned off, that which was not consumed, was reduced to the state of finely divided carbon, this was afterwards separated by solution and filtration of the heated mass. The filtered liquid, which was now colorless, was evaporated as before, and a perfectly white salt obtained, which however, was not pure carbonate of soda, it contained a mixture of this salt with chloride of sodium. An analysis of it gave the following percentage proportions.

| | | |
|---|---|---|
| Carbonate of soda | 51·3 | Carbonic acid 15<br>Soda.....36·3 |
| Chloride of Sodium with a trace of sulphates | 26·7 | |
| Water of crystallisation | 22·0 | |
| | 100·0 | |

The quantity of purified salt obtained was $2\frac{3}{4}$ pounds, equal to 21 per cent, of which quantity the half was anhydrous carbonate of soda—or, it may be more correctly expressed, that the crude dhoby's earth, contained 10·5 per cent. of pure anhydrous carbonate of soda, or about one-tenth of its weight. The determination was made by Will and Frezenius' method.

The carbonate of soda may be separated from the common salt by solution and recrystallisation, taking care to add only enough water to dissolve the former and to leave the latter untouched. This principle of separation, depending on the different solubilities of salts when in admixture, is frequently had recourse to in chemical operations. The salt which I prepared was undertaken as an experimental measure for the Indian drug committee, to whom it was handed over, in its impure state.

It is worthy of notice, that the crude specimens of dhoby's earth found in the south of India, differ from those of the northern provinces, in respect to the impurities which the Carbonate contains. According to statement by Dr. W. B. O'Shaugnessy of Calcutta, (Manual of Chemistry, p. 227, Ed. 1837,) the impurity of *Saji mati*, in the samples examined by him was sulphate of soda, amounting to 10 or 15 per cent., this he converts into carbonate of soda by an ingenious process, viz., by mixing the salt obtained from the washings of the crude earth, with one-tenth of its weight of charcoal, and heating it to redness: he remarks that by this means, "the sulphate of soda is converted into sulphuret of sodium, which by further heating and slow cooling is changed into carbonate of soda, so that another series of washings afford a solution, from which perfectly pure and colorless carbonate of soda can be obtained in octohedral crystals." Where common salt is the impurity, the process of conversion is not so simple. This difference, in regard to the impurity contained in the crude carbonate, as compared with the samples found in the North and the South of India, is no doubt due to a difference of the soil in these localities, and the same holds good respecting the nitre prepared from these sources; that from the northern provinces, of the samples examined by me, has a mixture of the sulphates and chlorides as impurities, (according to Dr. W. B. O'Shaugnessy 6 to 25 per cent. of sulphate and muriate of soda,) whilst the saltpetre of the South is almost free from an admixture of sulphates, chloride of sodium being the usual impurity.

The chief application of the crude earth by the natives of this country, is for washing cotton and linen fabrics, it is their staple article for this purpose. They do not however use it for clean-

ing printed cottons, as, according to their account, the color would be bleached by it, soap is used by them for this purpose.

The soap makers use a considerable quantity of dhoby's earth for saponifying fats and oils. So do the bangle-makers, and the manufacturers of coarse glass-ware. There are perhaps other uses to which this valuable natural product is put by the natives, which are not sufficiently well known.

## Editorial Remarks.

The case of prolapse of the uterus, which we publish in the present number, exposes the evils arising from incompetent people practising the art of midwifery; this is one of many cases which frequently occur in native practice: few can estimate the amount of injury committed by ignorant midwives, through a population counting some millions of souls. There cannot be a question of doubt, that very often, both offspring and parent are consigned to a premature grave. There appears to be no help for this state of things. Governed as India is, where respect is obliged to be had to customs, habits, and prejudices, which are so dissimilar to what prevails among any other nation on the surface of the earth; any interference on the part of Government to issue a protecting act, would be ill-construed by the bulk of the native population, as operating against the secrecy in which they are accustomed to keep their females. Though education is making strides through the length and breadth of the land, it has not as yet attained that height, that the masses can see the folly of committing the care of themselves, and of their families to incompetent people, practising the medical and obstetric art. A leading trait in the national character of the Hindoos is, that they do not pretend to be wiser than their fathers. What has been done of old, must of necessity be repeated in their time. This state of things must some time or other undergo correction for the better, but neither the present generation, nor the generation which is to follow, we fear are destined to witness

it. We do not wish to decry native midwives, among them, there are some, who, naturally intelligent, have by dint of experience acquired all that can in this way be picked up, but it is not possible for them to learn of their profession, without an acquaintance with anatomy and physiology, things not in their reach. The practical knowledge they possess, makes them very useful helps in cases of delivery; but the number thus qualified we believe is few, compared to those who are perfectly ignorant of what they profess to practise. Something is being done to teach native females of this country to be good practical widwives; there are some few of them of all castes, under instruction at the Government Lying-in-Hospital, and in course of time, this training must have a beneficial influence on the public, and lead to safety of life. But a considerable time must elapse before the good expected meets its widest scope, which it is desirable it should. We have been thus led to make these remarks from the desire of making the existence of the Lying-in-Hospital at Madras more generally known than it is, and of pointing out the evil arising from incompetent people practising as midwives, and the safeguard which the Government institution affords against such incompetency. We have ourselves visited this institution, and can speak of it in the highest terms of praise. An addition has been recently made to the building, an experienced matron resides on the premises, a Surgeon who is in charge lives within reach, and an establishment of subordinate servants with an Apothecary attached are ready at hand to afford all the help that is necessary. The attention paid to the inmates of the place, the comfort that they receive, the gratuitous subsistence which is allowed them, all speak in praise of a Government which has undertaken the maintenance of this institution from off private and benevolent hands, which first started it into existence. According to the rules at present in force in the Lying-in-Hospital, all classes of people may receive gratuitous aid, the friends and relations of the inmates being allowed to visit them all hours during the day.

We would not have any one to suppose that we have exaggerated the ills arising from the practice of ignorant native midwives. To such as may be credulous on this point, and we believe that few can any longer be so, for the evil is so palpable, we will extract from a communication which was furnished us since the article alluded to was in print. The writer remarks, "On Tuesday, 19th, I received an urgent summons from a person residing about half well distance, to come and see his wife, who was in labor of her 13th child, since the previous Saturday morning, and who was described to be in a dangerous state; I immediately attended to the call. A short robust woman, about 40 years of age, of full habit of body, was found at my visit, lying on the floor, surrounded by women, who were her friends. She was in a low and exhausted condition, the skin was bathed with cold perspiration; pulse small and hardly perceptible, respiration hurried and laborious, she is unable to answer questions put to her; the membranes by account were ruptured at 4 P. M. on Saturday; and on Sunday morning a *foot presented*, which the midwife returned, expecting that the head of the child would next follow.

"On Monday at midnight the patient became faint and speechless, a native medical practitioner was sent for, who refused to attend, but tendered his advice, by prescribing a decoction, which when prepared and given to the patient, afforded her no relief. Bowels were opened the previous evening, but she passed no urine since 8 P. M.

"On examination, the external organs of generation presented a most lamentable spectacle, the labiæ pudendi were enormously swollen, and fluid was dribbling from the vagina. The os was well dilated, the pains were weak and inefficient, state of bladder not ascertained.

"I desired the friends of the patient to avail themselves of the advantages afforded at the Lying-in-Hospital, to this they would not consent. I then prescribed the following.

℞ Pulvis Ergotæ ʒi
Sodæ Biborat. ϑ i i
Aq. Fervent. ʒ i i i. M. To be divided into two doses, one to be given immediately, the other after an interval of quarter of an hour.

"I then left the house, for the purpose of getting the midwifery instruments, when a man came and reported to me, that the woman died.

"The Ergot was not given."

Can a case be placed on record, exhibiting in a more deplorable degree the evils arising from ignorant people practising the art of midwifery? We leave the public to judge. We blame the medical person called, for not having taken his instruments with him when he first went to see the patient, in our opinion, he should have done this, as he was previously informed of the dangerous state of the case, though their use, was not likely to do much good, as the patient was apparently beyond the reach of recovery.

---

The subjoined paper on the subject of taking impressions from the leaves of plants &c., was placed at our disposal by Pensioned Sergeant F. Scott of Poonamallee. We print it for the use of our Student subscribers, who are engaged in the study of Botany, in the hope that it might be of some service to them. We have tried the process recommended, the impressions taken were good, accurate and delicate, but the ink made use of we thought was too pale for the purpose; it might be improved upon by those who give the subject their study, and we would recommend that a trial be made with poppy or linseed oil instead of the cocoanut in the preparation of the ink. The paper is as follows:—

"*Directions for taking impressions of the leaves and other flat parts of Plants.*

"*Preparation of the ink.* To half a wineglassful of cocoanut oil, in a clean iron ladle or spoon, add eight grains of dammer;

apply a gentle heat until the dammer is dissolved. Triturate eight grains of very fine lamp black with the oil thus prepared in a mortar, or on a slab, until the whole acquires a uniform consistence, preserve this in a phial with a narrow neck for use. The lamp black may be prepared by burning an oil lamp with a limited supply of air.

"*Preparation of the Pad.* Cut a piece of stout paste board, the cover of an old book will do, let it be of the size required; pad it well on both sides, and encase it in a piece of fine woollen fabric, in the way that a tailor covers a button: the pad should be firm and resisting, and the under surface perfectly even.

"*Method of taking the impression.* Shake the ink in the bottle well, and smear the even surface of the pad with some of it, let the ink be uniformly spread so as to moisten the pad. Place the leaf of which you wish to take the impression on a smooth piece of board or table, and having previously brushed off the sand &c., that may be adhering to it, stamp the surface with the inked pad; remove the leaf, and invert it on the paper which is to receive the impression. Put some folds of blotting or soft paper on the whole, rub it with the fingers up and down, or with a cushion made with the folds of a handkerchief, or it may be pressed with the palm of the hand; the friction, which should be very gentle, ought to be in the direction of the axis of the leaf; remove the folds of paper, and afterwards the leaf, or the leaf may be blown away, the impression will appear on the paper intended to be marked with it. The outline of the leaf with the indentations, serrations, veins and veinlets will be very distinct."

---

We have been requested to express our opinion as to the advisability of publishing this journal monthly, instead of every two months as at present. We regret that circumstances are not favorable for this change. The proprietor and publisher is ready to make the journal a monthly publication, but the obstacles which occur in the way are, the scarcity of matter in

regard to original communications, and the additional expense it will entail on the subscribers, especially on those who are situated in the Mofussil, on account of postage. We are not aware whether the circumstances of the majority of subscribers (we speak of the medical subordinates, who form the greater number) will admit of this additional outlay, if, however, it be the expressed wish of the subscribers generally that the change should take place, we will be prepared to make arrangements for carrying it into effect.

## Selections.

*The Effects of Lead upon the System.* By James Alderson, M. D., F. R. S.

(British and Foreign Medico-Chirurgical Review, April, 1853.)

Dr. Alderson believes that lead may be rendered soluble by any of the secretions of the body; and that it may therefore gain access to the system by the lungs, the alimentary canal, the vagina, the skin, and even by the conjunctiva. He discusses the various ways in which absorption from these surfaces may be effected; and he points to a fact derived from Statistical observations—namely, that absorption by the lungs is more productive of deleterious consequences than any other mode of receiving the metal into the system.

We are informed by Merat, that during the years 1776 and 1811, 241 cases of lead colic were admitted into the wards of La Charite. Of these, 148 were painters, 28 plumbers, 16 potters, 15 porcelain-makers, 12 lapidaries, 9 colour-grinders, 3 glass-blowers, 2 glaziers, 2 toymen, 2 shoemakers, 1 printer, 1 lead-miner, 1 leaf-beater, and 1 shot-manufacturer. In 1841, there were 302 cases admitted into the hospitals of Paris; of these 266 were occupied in white-lead factories: and according to the report of M. M. Pelouse and Rayer, who were deputed by the Academy of Sciences to inquire into the best means of ameliorating the evil consequences of such occupations, it appears that from the years 1838 to 1847 inclusive, 3142 patients laboring under lead-disease were admitted into La Charite; of which 1898 came from the white-lead manufactories in the department of La Seine alone. Their report further informs us, that during these ten years, the average number of patients had risen from 268—the number in Tanquerel's time—to 314.

As to the question of age at which attacks are most common; this, says Dr. Alderson, is much dwelt on by the French.

"Their tables show that between 30 and 40 years of age is that between which the greater number of cases occur, the next periods being from 40 to 50, and then from 20 to 30, the extremes at either end of the scale being exempt. It is impossible to draw any results, however, from these imperfect statistics, as the duties of the workers employed, as well as the aggregate numbers, should be known, for any argumentative purpose." (p. 98.)

Of 279 cases of colica pictonum referred to by Merat, 24 were under 20; 113 were between 19 and 30; 66 between 29 and 40; 38 between 39 and 50; 28 between 49 and 60; and 10 above the age of 60.

The mortality from colica pictonum is not very great, for Dr. Christison says, that of Merat's 279 cases 15 died, or 1 in 18·6. In 1833-4-5-6, there were 1541 cases treated in the hospitals of Paris, of which 38 died, or 1 in 39·5; and in 1839-40-41, there were 761 cases, of which 31 died, or 1 in 24·5.

Dr. Alderson has described the symptoms in the order of their occurrence, and has directed attention to the blueness around the edges of the gums, and their liability to hæmorrhage—both of which, he thinks, are among the earliest indications of the malady; then to the waxy tint of the countenance; the emaciated, anxious look; the poorness of the blood; the quick but feeble pulse; the obstinate constipation; the attacks of twisting colic, which are relieved by gradually increased pressure; the nausea and distress from flatus; the checked secretions from the kidneys and alimentary canal; the wandering rheumatic pains; the weakness of the upper extremities, amounting at last to palsy; the amaurosis; and, finally, the fatal apoplexy. He remarks, however, that

"The effects of the imbibed poison are by no means constant: different individuals are affected in dissimilar ways. In one, colic will be the result; in another, paralysis; in a third, the effect may be merely anomalous pains in the limbs or in the body, which, without the history of the case, might seem obscure in their origin and nature; in a fourth, the morbid influence may be manifest in the form of epilepsy or convulsions, and a modification of the paralysis is sometimes found in the forms of amaurosis and deafness. These several varieties have been separated by the French into distinct forms of disease, for each of which they have elaborated a high-sounding designation, such as 'arthralgia,' 'encephalopatic,' &c.

"All these various results of the action of lead may, however, be set up in different individuals under the same identical circumstances, labouring in the same workshop, and exposed to the same deleterious influences. It is more reasonable, consequently, to regard them as a series of symptoms developed differently, according to the peculiarity of individual constitution or of the especial mode of absorption of the poison. The classification will be more convenient, as well as more efficient for the purposes of treatment, if we divide the subject into the two leading forms of colic and paralysis. Colic has usually been called the acute, and paralysis the chronic form; but I have considerable doubt of the accuracy of this distinction. There are well-recorded instances of paralysis being set up after a very short period of exposure to the noxious influence, without any intervention of colic; while, on the other hand, long-continued and frequently-repeated attacks of colic occur without paralysis supervening. Colic

is undoubtedly the form of most frequent occurrence, and that with which practitioners are most familiar, especially in this country. Happily, also, it is the form which is the most amenable to treatment—indeed, so manageable that it is rarely fatal." (p. 75.)

He is of opinion, that when lead gains admission into the body through the lungs, it is most likely to occasion paralysis of an acute kind, but that when it enters the system by the alimentary canal it most frequently produces colic. In explanation of the former effect, he hazards a conjecture that it may be owing to the numerous intimate communications between the nerves of respiration and those of the axillary plexus. He says, indeed, that

"Dr. Bright's observations all lead him to this origin as the point in which to look for the seat of the disease; and here it is that the axillary plexus, the phrenic, and many of the nerves of the mechanical part of respiration, have their rise. It would appear, besides, as if it were possible that the absorbent glands in the axilla might, in some degree, promote the transmission to the trunks of nerves which supply the upper extremities; and there is one remarkable fact, that all the muscles in the forearm affected by this form of paralysis are supplied by one individual nerve." (p. 392.)

In those cases where colic is the result, he thinks that the specific seat of the disease is in the large intestine, the circular fibres of which have first become contracted, and then paralysed, by the local action of the lead on the tissues. Indeed, this appears to be the probable cause of the mischief in every case; for it is an ascertained fact, that the metal always exists in the tissues of the paralysed muscles; and with respect to the phenomena witnessed, Dr. Alderson remarks, that—

"The *complete* influence of lead results in the graver forms of paralysis, and the more *partial* influence results in that state of disinclination to act, or of impaired power to act, which is a consequence of the attendant pain. In the extremities there is impairment of muscular power, and there is exalted sensibility: in the bowel there is excruciating pain, with a contracted state of the circular fibre of the muscular coat; in both cases there is the same inability or disinclination to action of the muscular fibre, which is in colic the great cause of constipation. It is the astringent power of lead which in both cases prevents the muscular fibre from performing its due function; consequently colic is the result of an approach to the specific paralysis of lead, developed in the muscular coat of the intestine." (p. 167.)

As to treatment: Dr. Alderson thinks that the great desideratum is, to choose the most certain and, at the same time, least distressing purgative—the action of which is comparatively uninfluenced by combination with opium.

"Calomel alone, or in combination with the compound extract of colocynth of our Pharmacopœia, and with opium, is the aperient which may most safely be relied on in all stages—even during sickness; not, however, omitting to guard against the probability of the constitutional effect taking place, and superseding the purgative. The combination of croton oil prevents such results, by accelerating the action; and as all remedies have their specific effect upon different portions of the canal, we secure our object better by combination. Whenever the above combination has failed to succeed, we have

still a resource in the use of croton oil in full dose. Its action in this disease is speedy and safe: a couple of hours scarcely elapses without satisfactory result.

"Castor-oil is a favourite remedy in self-treatment at the manufactories, and, no doubt, is of the greatest value in the earlier symptoms. The women, who are more careful of self-management than the men, have frequent recourse to it in the beginning of indisposition, and in this way perhaps obtain that protection which has been attributed to other causes." (p. 213.)

The warm bath is another remedy, of which he speaks in favourable terms; and referring to the experience of the late Dr. Pereira at the London Hospital, he says that the addition of four ounces of sulphuret of potassium to thirty gallons of water increases its efficacy. The sulphur of the alkaline salt combines with the lead which may be present on the skin, or immediately below its surface, and forms a dark discoloration. This is observed to occur even after many ablutions, and it is chiefly developed in the axilla, the abdomen, the inside of the thigh, the palms of the hands, the back, and in all those parts where an abundance of hair is met with. Dr. Alderson thinks it probable, that the discoloration is due to the lead which is mechanically entangled by the hair and sebaceous matter of those parts. Some of it, however, is perhaps dependent on the metal excreted by the skin; for in one of the cases of lead-poisoning mentioned by Dr. De Mussy, the whole of the abdomen became black after a sulphur bath, notwithstanding that the patient had never been exposed to emanations from lead, and could not, therefore, have acquired surface accumulation.

Lastly, in the treatment of lead-colic, we are told that the use of opium is indispensable as a means of relieving the distress which occurs during the night, and renders sleep otherwise unattainable.

The cure of paralysis from lead, Dr. Alderson regards as a much more difficult matter, for he says:

"In this form of the disease, the change of colour, the impaired muscular power, and the wasting of the paralysed muscles, demonstrate that there is an almost broken constitution to deal with, and one which would fail to endure the trial of very active measures. In colic we find an apparent wasting of the solids, especially indicated in the shrinking of the features; but this seeming emaciation is so soon recovered from, the form so rapidly restored to its usual proportions, and the complexion to a natural hue, that it cannot but be regarded as merely illusory. In paralysis, however, there is not a seeming, but a real, change in the structure of the muscles. There is actual emaciation, and it is one of the symptoms from which, when appearing in excess, we should draw the most unfavourable conclusions as to the prospect of final recovery; for here, indeed, the altered and impoverished condition of the blood is distinctly manifest." (p. 213.)

We have not space to discuss in detail the treatment which he proposes in these cases, but we may state that he recommends immediate removal from the source of the disease, the use of mild purgatives, the employment of the sulphuret-of-potassium bath, and the application of electricity or galvanism to the paralysed limbs. He thinks that the former of these physical agents is most useful in amaurosis, and

the latter in palsy. He prefers the latter, because of its low tension and high chemical power; and he has ventured to propose a means of applying it which is somewhat novel.

"Our positive metal we may consider to be the lead in the nerves and muscles and tissues, and our negative metal, plates of copper, which we must attach to the limb itself; a weak solution of acetic acid may form the oxydating and connecting link. I choose acetic acid, because the acetate of lead is soluble, and there is every ground for reasoning that the chemical and galvanic action set up will cause the lead to be withdrawn from the muscles." (p. 214.)

We hope that this may be so, even in spite of our fears to the contrary. Dr. Alderson is strongly opposed to the practice of administering strychnia in these cases, as will be seen from the following remarks.

"It is usual to give tonics, and in a safe form there can be no doubt of their general efficacy; but of the class of alkaloids, such as strychnia, we must admit that the danger of their use hardly excuses such experimental treatment without the greatest caution. My own recollection of the reputed success of the use of strychnia many years ago in France, coupled with my knowledge, at the same time, that these reports were unsupported by real evidence, makes me very dubious of later statements on this subject." (p. 214.)

Dr. Alderson perceives the necessity for speedily removing the poisonous metal from the system, for he says, "it is obvious that the first step must be to free the nervous and muscular tissue from the offending cause;" nevertheless, he has not mentioned, or even referred to, the plan of treatment recommended by Melsens, notwithstanding that this plan offers the most hopeful means for accomplishing so important an object. Analysis has proved, that in lead-disease the poison is contained in the muscular and nervous tissues of the affected parts. The metal has likewise been found in the blood, in the liver, and in the substance of the brain; from which it is highly probable, that the whole of the phenomena witnessed in these cases are due to the actual presence and chemical reactions of the metal on the tissues of the affected parts. If this be true, what more likely chance is there of restoring health, than that which offers an easy mode of eliminating the poison?—(*H. Letheby.*)

---

## *Some of the More Important Points in Surgery.* By J. G. Guthrie, Esq., F. R. S.

(Lancet, April 9, 1853.)

### *On Wounds of the Chest.*

The removal of splinters of bone, or of other foreign bodies from the lung, has occupied the attention of surgeons from the earliest periods, and some of them proposed to draw a piece of cambric, and other things, through the chest, for the purpose of removing them. These extreme measures have been abandoned; but there can be no doubt of the propriety of removing as many of these causes of irrita-

tion as can be either seen or felt. If the ball has broken a rib, the orifice of entrance especially should be enlarged as early and as carefully as possible, so as to give an opportunity for the removal of the splinters, and of all angular points of bone which may be turned inwards. A little addition to the original opening can do no harm, and, if the lung should not collapse or be adherent, will enable the surgeon to see whether any splinters are impacted in it, and to remove them. It is possible that the end of the finger may be even introduced, and the lung felt, if it should not have receded too far; and as it is insensible to such an operation, no evil will ensue; but all probings, with small sharp-pointed instruments should be avoided. That wadding, buttons, pieces of cloth, and of bone, have been frequently coughed up, I have had experience; and although it is said balls have even been brought up, I have not had an opportunity of seeing them.

An officer was wounded by a musket-ball on the 9th of July, 1745, which passed through the chest, entering in front, fracturing the seventh rib near its junction with the cartilage attaching it to the sternum, and passing out behind, near the angle of the same rib, which it again broke, together with the one immediately below it. M. Guerin enlarged the openings of entrance and of exit to the extent of nearly two inches, by dividing the pleura, the intercostal muscles, and the integuments, from within outwards. Several splinters of the rib which injured the lung were removed, of which the smallest might be half an inch or six lines long, by two wide. A tent was then passed through the wound. The patient suffered much, spit a great deal of blood, pulse feeble, extremities cold. He was bled three times the first night, and twenty-six times during the first fifteen days, the seton being retained in the chest the whole time. On the twenty-second day, a piece of cloth was felt by the finger, after removing the seton, and was extracted; a splinter was also felt, but so deeply that it could not be removed without enlarging the incision. As the inflammatory symptoms were re-excited, he was bled for the twenty-ninth time. On the thirtieth day, these symptoms had so much increased, that the seton was withdrawn, under the impression that it was doing more harm than good, and the thirty-first bleeding was effected. The next morning the patient complained of something pricking him within, and the parts left between the two original wounds, after the incisions which had already been made, were divided. The chest was now open from the articulation of the head of the rib with the sixth and seventh vertebræ behind, nearly to the cartilage in front; and the whole course of the ball was seen, which had made a groove in the surface of the lung, in the substance of which a splinter was sticking. This was extracted, and the wound dressed simply, after which the patient gradually improved, and was quite cured in four months.

The two first incisions for the removal of the splinters were necessary. The tent or seton drawn through the chest was an error; and although the fortunate result of the case depended probably on the remo-

val of the splinters of bone sticking in the lung, few would survive the formidable operation performed for their removal. The case is suggestive and instructive.

When the lung can be seen through the opening made by the ball, or after some moderate enlargement for the purpose of removing any splintered pieces of rib or any spiculæ which can be felt or seen, the object is attained. I have not had experience of the utility of large incisions for the purpose of making the lung more visible, although the importance of extracting foreign substances in the first instance is inculcated, provided their situation can be ascertained.

A Spanish soldier, wounded at the battle of Toulouse, was brought to me the same evening, shot through the right side of the chest, between the fifth and sixth ribs, one of which was fractured, the ball passing out nearly opposite behind. On removing the splinters by the aid of an incision, I found that the lung was adherent to the inside of the chest, and was enabled to withdraw from within the lung some splinters of bone, and a part of his coat. He left Toulouse apparently doing well; but natives of warm climates rarely suffer from such severe attacks of inflammation as those of northern habits and constitutions.

When a ball, or portion of bone, leather, cloth, wadding, or other foreign substances, are driven into the cavity of the pleura, they usually give rise to fatal results, constituting therefore cases of the greatest importance, to which attention has not been sufficiently given but on which too much cannot be bestowed, if life is to be preserved by the art of surgery. The neglect of these cases has probably arisen from the insufficiency of the means of ascertaining them— an insufficiency which auscultation has in some measure removed, and which the science of surgery may further elucidate. The presence of a ball, a piece of bone, or other substance, lying upon or rolling about on the pleura, covering the diaphragm, must give rise to more or less irritation, inflammation, and consequent suppuration; or the formation of matter upon the surface of that membrane in its thickened state, until, in all probability, the foreign substance is removed, or the persons waste away and die.

The presence of a ball, rolling about on the diaphragm, can now be ascertained by means of the stethoscope at an early period, so as to admit of an operation being undertaken with confidence for its removal; whilst the knowledge acquired by auscultation or percussion of the filling of the chest by fluid, whether serous, bloody, or purulent, is at the same time incontestibly demonstrated. The presence of a ball, or of any other foreign body, decides the question as to the place where the opening into the chest should be made: and, on this point, the information derived from the practice of the French surgeons in Algeria is valuable.

M. Baudens, whose labours I refer to with great pleasure, says that he has also seen splinters of bone and even a ball, surrounded by a

cyst formed by the pseudo-membranes of inflammation, cut off from the general cavity, and confined in the angular space formed behind between the rib, the diaphragm, and the spine. In one case, M. Baudens introduced a *sonde a dard*, such as is used in the high operation for the stone, between the second and third ribs, and made it project behind between the eleventh and twelfth ribs. He then cut down upon it, and extracted a ball and some splinters of the rib. The wound thus made was then closed, the upper wound being sucked dry daily by a pump. The patient recovered in forty days.

M. Baudens says himself, and rightly, that the operation of opening into the chest should have been performed in the eleventh intercostal space, and that the wound in front should have been enlarged.

M. Baudens relates another case, in which the posterior wound, situated near the angle of the tenth rib, had healed; the anterior one, half an inch below the clavicle, giving issue to an abundant and weakening suppuration. The lung above this was permeable to air, but the respiratory murmur could not be heard below it. To draw off this offensive fluid, he adapted an empty caoutchouc bag to a gum-elastic canula, which he affixed against the orifice of the wound, and then sucked out six pints in five days. Some days later the wound behind re-opened, and a piece of bone was discharged from it, which saved his life. Two years afterwards the man was seen in good health.

The desire to have as dependent an opening in the chest as possible has been manifested by all surgeons of experience in these injuries; and the interspaces between the ninth and tenth, and between the tenth and eleventh ribs, have been often selected for this purpose; but as the operation was formerly done with the trocar, the abdomen was as often opened as the thorax, and death was frequently caused by the operation, even if it would not have been occasioned by the disease. To prevent, or to avoid this evil, M. Baudens advises its being performed at three fingers' distance from the spine, by incision, and he says he has frequently done it with success, although he does not give any circumstantial directions as to the operative method to be pursued. I therefore caused several experiments and dissections to be made in the work-room of the College of Surgeons, with the following result:—

1. That a trocar and canula pushed in between the eleventh and twelfth ribs, in a diagonal direction upwards, and on a line with the angle of the ribs generally, will in the *dead body* invariably enter the cavity of the chest without injuring the diaphragm.

2. That the same operation performed on the *living body* would, in all probability, if done at the moment of expiration, first enter the thorax, then pierce the diaphragm, and thus open into the cavity of the abdomen,—a difference in result to be explained by reference to the anatomy and physiology of the parts concerned; and showing that

this operation, when required on man, should alway be done cautiously, by incision, and not by puncture with the trocar and canula.

In making an opening into the chest between the tenth and eleventh or between the eleventh and twelfth ribs, the artery will not be injured, provided the opening be made below the middle of the intercostal space, which is wider between the eleventh and twelfth ribs than between those above it. The vein is situated above the artery, and proceeds to the vena azygos major on the right, and to the smaller azygos vein on the left side.

The intercostal nerves are the anterior branches of the dorsal nerves, and lie below the arteries under the pleura upon the external intercostal muscle, until they approach the angles of the ribs, where they enter between the layers of the intercostal muscles.

It is worthy of observation that the pleura is necessarily continued over the inside of the twelfth rib, to line the different attachments of the diaphragm, and that an incision may always be made into the chest above this point, if done carefully.

The eleventh and twelfth ribs, unlike all those which precede them, except the first, have only one surface of articulation with the corresponding vertebra, to which they are attached, instead of two facettes articulating, one with the body of the vertebra above, the other with that below. They form—and particularly the twelfth—a more acute angle with the spine than the others, which gives to them their greater degree of obliquity ; whilst the freedom of their cartilaginous extremities enables the twelfth particularly, to be depressed or separated by a moderate force from the rib above, to a greater extent than at any other part ; by which means a foreign body of larger size may be removed from between them more readily than elsewhere.

*Operation.*—The eleventh and twelfth ribs having been distinctly traced, and the obliquity of their descent from the spine having been clearly made out, the patient ought, if possible, to be placed on a stool with the upper part of the chest supported by a pillow on a table before him. An incision should then be made, over the intercostal space between these ribs, three inches long, and slightly curved through the integuments down to the latissimus dorsi muscle ; and as the mass of long spinal muscles is usually three inches in width, and can in general be seen, the incision should commence two inches from, but between the spinous processes of the eleventh and twelfth vertebræ, and be continued obliquely or diagonally downwards in the course of the interspace between these ribs. The latissimus dorsi and the serratus posticus inferior muscles being divided at the upper part where they cover the longissimus dorsi, or the long spinal muscular mass alluded to, its edge becomes apparent, and from this point the latissimus and the serratus are to be further divided downwards. The external intercostal muscle being thus exposed, its fibres should be scratched through or separated, in the middle of the interspace between the ribs,

which can now be seen as well as felt. A director should be introduced below the muscle, on which it may be carefully cut through, as well as any fibres of the internal intercostal muscle, which may extend as far as the wound thus made. The pleura will be then exposed, and if the cavity of the chest contain fluid in any quanity, it can scarcely fail to project in such a manner as to convey to the finger the assurance of its being beneath. An opening may now be carefully made into it, at the upper part of the incision close to the external vertical fibres of the spinal mass of muscles, *at the moment of inspiration*, and on the existence of fluid being ascertained by its discharge, the opening should be enlarged, a director having been previously introduced under the pleura, as far as may be thought necessary for the admission of the finger, or any instrument which may be required.

The patient should be desired to draw a full breath at the moment of puncturing the pleura, in order that the diaphragm may descend as low as possible; for if there should not be any fluid in the chest, the diaphragm in ascending during expiration, might be applied to the inside of the pleura lining the chest as high even as the fifth rib counting from above, and might easily be divided with the pleura, if great care were not taken at this part of the operation; or if a trocar or canula were incautiously thrust in at such a moment. Whenever the smallest instrument of this kind is used, even in an explorative operation, it should only be introduced during the process of inspiration.

In all cases of wounds of the chest, in which ascultation points out the presence of a ball rolling loose on the diaphragm, as it will do immediately after the receipt of the injury, this operation should be performed for its removal, and may save the life of the sufferer. At a later period the presence of a foreign body perhaps can only be known by the sounds or defect of sounds which may be observed at the back part of the chest, in which the ball or other foreign bodies lodge or become enveloped by matters confining them in that situation.

---

*On the Pathology of affections allied to Epilepsy.* By C. B. Radcliffe, M. D., L. R. C. P.

(Lancet, April 9, 1853.)

*Laryngismus Stridulus.*

The condition of the *medulla oblongata and spinal cord* in the affection under consideration is more obscure than that of the brain, and the evidence upon which a conclusion is to be based much less tangible. We will, however, endeavour to analyze this evidence, beginning with that which is derived from the state of the neck—evidence upon which so much has recently been written by Dr. Marshal Hall.

It is perfectly clear that the closure of the glottis in laryngismus stridulus is sometimes followed by cramps in the hands and feet, and

sometimes by general convulsions; but it is not equally clear that these symptoms are caused by the closure. Ordinary attacks of this affection are without any spasm or convulsion, except that which exists in the throat, and yet the larynx is completely closed, or apparently so. In cases also where spasm or convulsion are present, it not unfrequently happens that such spasm or convulsion may alternate with, or distinctly precede, the closure of the glottis. These facts, which are familiar to all who have taken the trouble to watch a few cases of this malady, or even a single case so faithfully, and which have not escaped the notice of the best writers on the subject, enable us to conclude, that the glottis may be closed in laryngismus stridulus without the supervention of other convulsive symptoms, and that these general convulsive symptoms may arise without closure of the glottis.

There is also another fact which must not be lost sight of in considering the influence of laryngismus in muscular derangement. This is the much greater narrowness of the chink of the glottis, and the far greater disposition to spasmodic closure in this chink in young animals than in adults. Thus, on dividing the laryngeal nerves in a young dog, this chink immediately closes, and suffocation follows; but not so in an adult dog, though in this case there is a sensible interruption to the passage of air into the lungs. This fact also is in harmony with the history of laryngismus stridulus, which history is to the effect that this affection (where it is independent of local disease) is almost exclusively confined to children.

What, however, are the clinical facts on the subject? Does laryngismus exist, or does it not, in the affections allied to epilepsy? In epilepsy, as I have endeavoured to show, the preponderating evidence is in the negative. I have sat for hours in wards where many epileptics were gathered together, and have seen scores of fits at these times without once hearing the crowing respiration of laryngismus. Nor would it seem to be different in the affections allied to epilepsy. There is no crowing gasp in any kind of tremulousness. In hysteric convulsion it has not fallen to my lot to hear it, nor is it described by others. In hydrophobia, the state of the throat might naturally lead one to suspect its existence, but it is not mentioned in the description of cases. Nor is it otherwise with the convulsions of fever. Even in children it cannot be common, or it would have been mentioned, for it is too remarkable a symptom to escape notice. So also with the convulsions of death. Cramp is certainly independent of laryngismus, for the patient affected is at liberty to shout and howl to any extent. The voice is often extinct in the spasms of cholera, but the breath passes freely in and out of the chest. In catalepsy the breathing is not absolutely suspended, and the muscles of respiration are freer, or as free as any other muscles in the body. In tetanus the breath is much disturbed, but this disturbance is clearly owing to fixation of the ribs and diaphragm rather than to any laryngeal closure; indeed, the whole course of the malady goes to show that the spasms begin in the voluntary and not in the involuntary muscles, and that the latter mus-

cles are only implicated when the tetanic state has proceeded to an almost fatal extent. In cadaveric rigidity, also, laryngismus can scarcely be supposed to play the part of a cause.

In all these cases it is to be borne in mind that the crowing inspiration is after and not before the laryngismus. If it were before, it might now and then have escaped notice, for the actual commencement of a fit is seldom seen ; but being afterwards, when the attention has been fully aroused by the fit, it could scarcely have escaped notice if it had existed. Indeed, if laryngismus played the part which is ascribed to it, every severe kind of fit ought to end in a hoop, which is certainly not the case.

The conclusion, therefore, is the same as in epilepsy, for the history of laryngismus stridulus, the physiological anatomy of the larynx, and the want of clinical proof, all go to show that laryngismus is only an occasional and unimportant symptom in muscular derangement, and not so all-important a cause as we have been led to suppose it.

### *On Trachelismus.*

Trachelismus is, no doubt, an important feature in some varieties of convulsive disorder, and indicative, among other things, of serious venous engorgement in the brain, medulla oblongata, and nuchal portion of the spinal cord; but that this congestion has much to do with the convulsion or the insensibility which often accompanies convulsions, is not so certain.

First of all nothing is more evident than that tremor, convulsion, or spasm, may occur without trachelismus. In all kinds of tremulousness the neck either preserves its natural appearance, or is positively shrunken and bloodless, and the mental state is one of morbid sensibility—not of stupor. In hydrophobia, where it might be expected to be different, there are some cases in which a most careful examination can find no trace of trachelismus. Again, in cramp and cholera there is neither fulness of the neck, nor any symptom approaching to stupor.

In the next place it is perfectly clear that, in many instances, the insensibility is not comatose, but syncopal in its character, and, therefore, not referrible to the venous engorgement occasioned by trachelismus. The insensibility of the hysteric convulsion is most generally (we believe invariably) syncopal. The insensibility of convulsion from mortal hæmorrhage is manifestly of the same nature, for the vessels at the same time are well-nigh empty ; and so also with the insensibility attendant upon other kinds of death-struggles, for the cold, pale, and shrunken face, and the faltering pulse, are not to be mistaken. Even when there has previously been coma, this would seem to have passed off and blended into syncope before these struggles happen. The insensibility of catalepsy is evidently closely akin to that of cadaveric rigidity, and that of cadaveric rigidity is one of emptiness of the capillaries, and utter stagnation of the blood—mortal and continuing syncope.

Few cases are, therefore, left, in which trachelismus can exist—namely, the convulsion of the beginning and end of certain febrile and inflammatory affections; and even in these cases that existence is often more than doubtful. Often, particularly in children, these convulsions set in when the face is cold and pale, and the pulse syncopal, and when everything indicates continuing sinking. Repeatedly the pulse cannot be felt at all; and at best it is far below its natural energy and activity.

There can be no doubt that venous engorgement in the head and neck *may* cause convulsion and insensibility; but that convulsion and insensibility *are* frequently so caused the foregoing arguments would seem to render more than doubtful. Indeed, this may be said to be the natural deduction from the history of ordinary apoplexy, which history is, that the cases accompanied by convulsion are not those in which the face is turgid and the pulse full, but those in which the face is cadaverous and the pulse miserable. The question is no doubt of considerable difficulty, and the more so as coma continually passes into syncope, or syncope into coma; but the general result, and the truth, as we take it, is what has been stated.

If, therefore, trachelismus and laryngismus are of such unfrequent occurrence as the foregoing remarks would go to show, the two great arguments for any special disturbance in the medulla oblongata and spinal cord fall to the ground, and there is an end of them so far as we are concerned.

The remaining evidence is both scanty and easily disposed of. That congestion of the medulla oblongata which is met with in some cases of hydrophobia is certainly not necessary to the convulsion of this disease. This appears from its inconstancy, from the absence of any such phenomenon in other forms of convulsion, but chiefly from the presence of the congested gullet, of which, indeed, the congested medulla is but a part—a part by contiguity of textures. The tenderness of the lower part of the spinal cord, which is occasionally met with in hysteric convulsion, is of the same significance as the congestion in the medulla oblongata, of which mention has just been made. It is not essential to the convulsion, because in the majority of instances it is absent, and the back may be drummed upon with impunity to any extent; on the other hand, it may naturally be related to that morbidly sensitive state of the uterus, of which it is commonly symptomatic. The last evidence to be considered is that furnished by morbid anatomy; and of this it may be summarily said, that it is either nothing at all, or nothing which can be related with any degree of certainty to the muscular disorder.

Hence the conclusion that there is no over-activity of the medulla oblongata and spinal cord, but a strong suspicion of under-activity. This suspicion arises in the fact that the circulation is depressed, and that this depression involves a corresponding depression in nervous energy wherever developed—a suspicion which is borne out by the want of proper muscular tone.

## *Elements of Blood: Origin and Destination of the Blood-corpuscles.* By Professor BENNETT.

(British and Foreign Medico-Chirurgical Review, April 1853.)

Bennett (Edinburgh Monthly Journal, March, 1852) has investigated this highly interesting and important problem, about the solution of which two opinions have chiefly prevailed; one being, that the coloured corpuscles are formed from the colourless (by direct transformation, Paget); the other theory maintaining, that while such may be the case in fishes, reptiles, and birds, in mammals the coloured disc is merely the liberated nucleus of the colourless corpuscles (Wharton Jones). From his own researches Bennett inclines to the latter view; the paper contains the results of several observations connected with his researches on leucocythemia, which appear to him sufficient to establish this opinion. The following are his conclusions:

1. That the blood-corpuscles of vertebrate animals are originally formed in the lymphatic glandular system, and that the great majority of them, on joining the circulation, become coloured in a manner that is not yet explained. Hence the blood may be considered as a secretion from the lymphatic glands, although in the higher animals that secretion only becomes fully formed after it has received colour by exposure to oxygen in the lungs.

2. That in mammalia the lymphatic glandular system is composed of the spleen, thymus, thyroid, supra-renal, pituitary, pineal, and lymphatic glands.

3. That in fishes, reptiles, and birds, the coloured blood-corpuscles are nucleated cells, originating in these glands; but that in mammalia they are free nuclei, sometimes derived as such from the glands, at others developed within colourless cells.

4. That in certain hypertrophies of the lymphatic glands, their cell-elements are multiplied to an unusual extent, and under such circumstances find their way into the blood, and constitute an increase in the number of its colourless cells. This is leucocythemia.

5. That the solution of the blood-corpuscles, conjoined with the effete matter derived from the secondary digestion of the tissues, which is not converted into albumen, constitutes blood-fibrin.

Whatever importance may be attached to these conclusions as regards the adult, it must be borne in mind that blood-corpuscles are formed under conditions in which there can be no connexion shown with glands of any kind, as in the ovum; and again, as we learn from M. Lecanu's researches, that while fibrin is abundant in the serum, it exists only in the *envelopes* of the globules.

---

## *Micro-Chemistry of Blood.* By M. LECANU.

(British and Foreign Medico-Chirurgical Review, April 1853.)

M. Lecanu has presented to the Institute a memoir on the blood, (read to the Academy des Sciences, July 1852,) in which he takes up the solution of some highly important questions—viz.,

the origin of the fibrine; the separation of the globules from the other constituents, and the determination of the chemical constitution of the globules. Having satisfied himself that a concentrated solution of sulphate of soda, which prevents the precipitation of fibrine, is without action on the globules, he received a quantity of blood into a solution of sulphate of soda, at a temperature of 12°, and marking 12° Baume. The mixture was then filtered; the globules remained on the filter, while serum passed through; from the latter, on the addition of eight or nine times its volume of water, the fibrine was precipitated in gelatinous filaments, scarcely a trace of it remaining in the filtered liquor. As it is subsequently shown that the globules contain but very little fibrine, and that only in their envelopes, it follows that this substance is contained in the serum chiefly. In order to obtain the globules perfectly free from serum, it is only necessary to allow them to remain on the filter, and wash them with the saturated solution of soda. When obtained thus, M. Lecanu finds that they consist of not less than eight different substances,—1. Hæmatosine; 2. Globuline; 3. A very small quantity of albumen; 4. A fibrinous matter, constituting their envelope; 5. An animal extractive matter, soluble in ether and alcohol; 6. A fatty matter; 7. Various salts, amongst which are chlorides, phosphates, and alkaline carbonates; and 8. Water which holds all these matters, with the exception of the envelope, in solution. Water, it is well known, breaks up the globules, leaving their envelopes isolated, and dissolving their contents; by boiling this solution, the globuline, hæmatosine, and albumen, are coagulated. Hæmatosine is soluble in alcohol and ether at ordinary temperatures, giving to the solution a beautiful red colour of blood, and by spontaneous evaporation forming small lamellæ of a metallic lustre, and an amethyst colour, exactly like the red silver of mineralogists. M. Lecanu believes in the presence of iron in the blood, but does not express, himself definitely as to its particular mode of combination. (He suggests, with regard to hæmatosine, that there is reason to think that it would be an excellent substitute for the combinations of iron exhibited in cholorosis and other affections. The difficulty of procuring it in sufficient quantity is, however, considerable; the largest quantity he obtained being about 30 grains, from somewhat more than one pound and a half of ox blood.) With regard to albumen in the globules, the commissioners appear to think that as it is in such very small quantity in these little bodies, swimming in a highly albuminous fluid, its presence in them may be due to absorption or endosmose. The following contrast between the two chief constituents of the blood is highly interesting and valuable:—"It results," say the commissioners, "from these observations, that the animal matters which compose the serum are essentially different from those which compose the blood-corpuscles. The serum contains but albumen and fibrine: no globuline—no hæmatosine; the globules, on the contrary, contain hæmatosine and globuline, with a fibrinous matter, but no fibrine, and only a little albumen."

*On the Protection against Small-pox afforded by Vaccination, illustrated by the returns of the Army, Navy, and Royal Military Asylum.* By J. Graham Balfour, M.D., Surgeon to the Royal Military Asylum, Chelsea.

(British and Foreign Medico-Chirurgical Review, April 1853.)

In this short but very able statistical paper, compiled from the sources given above, the immense protective influence of vaccination is satisfactorily proved. All soldiers and sailors are instantly vaccinated on entrance into the service, if they have not been so previously. They are, of course, distributed over various countries, and are sometimes in places where small-pox is raging, yet it appears that in eight years from 1844 to 1851, out of a total number of 1,125,854 soldiers, only 745 cases of small-pox occurred, or 66 to every 100,000 men; while among 363,370 sailors, there were 417 cases of small-pox, or 115 in every 100,000 men. The deaths from small-pox have been only 130 in nearly 1,500,000 men. Among the boys in the Military Asylum, who are all vaccinated, or have had small-pox, there have been only 39 cases and 4 deaths among 31,705 boys. It appears, also, that almost as many of these cases occurred in boys who had had small-pox, as among those who had been simply vaccinated. All the four deaths were in boys who had had small-pox. This last result is extremely important, and, as the author remarks, bears strongly against the advice lately tendered, that inoculation should be legalized.

---

*On a New Method of Separating Urea from Urine.* By M.M. Charles Robins and F. Verdeil.

(British and Foreign Medico-Chirurgical Review, April 1853.)

We have employed another method for separating urea from urine, which has enabled us to obtain this substance directly, without having recourse to a series of combinations and decompositions. The urine is first evaporated on the water-bath, and the solid residue thoroughly dried over sulphuric acid, under the air-pump. The brittle mass is then to be treated with boiling absolute alcohol, until it yields no more colouring matter to that fluid. It is advisable, in order to obtain this extract, to employ repeated small quantities of alcohol, the solution being decanted after each operation. By this process the whole of the free urea contained in the urine examined may be extracted, together with a small quantity of common salt: test-paper will show this alcholic solution to have a strong acid reaction. Sulphuric ether is then added to the acid alcholic extract, care being taken to pour it gently down the sides of the glass, to prevent the fluids from mixing. At first, a cloudy precipitate will appear, at the line of contact of the two liquids, gradually extending below and above. Five or six hours afterwards the precipitate disappears, when the sides of the beaker will be found covered with beautiful, needle-like crystals of urea, sprouting from the sides and bottom of the glass to the centre

of the fluid. Ether is now added until the precipitate ceases to appear, and another crop of crystals is obtained. We have frequently observed the crystals of urea, at the end of the operation, to sprout from one side of the beaker to the other, being interlaced in a variety of ways. Large leaf-like masses of crystals are often seen adhering to the others, and resting upon their thickest extremity, or that connected with the glass. From their being mixed with a little common salt, the crystals of urea deliquesce very readily as soon as the mother liquor is decanted ; but another crystallization in water will produce them in the pure state. From the above method for the extraction of urea, we may safely conclude that by far the largest proportion of this substance exists in the free state, as one of the immediate principles of human urine.

---

## *Remarks on a few Interesting Cases of Strangulated Hernia.*

By Barnard Holt, Esq., F.R.C.S.,

(Lancet, January 8, 1853.)

I was requested by Mr. Jones, of Eldon-place, Vauxhall, to meet him in consultation upon the case of a lady, aged sixty-four, who had been many years the subject of femoral hernia, and which had become strangulated ten days previous to Mr. Jones' visit.

She stated that while lifting her box after a journey by railway, the bowel became protruded, and could not be returned. During the first two days she merely experienced inconvenience from constipation, but vomiting speedily supervened, and continued with but little intermission until the day previous to the operation, when the vomited matter became stercoraceous, and she evinced considerable tenderness when abdominal pressure was employed ; there was general tympanitis, and the hernial protrusion was *very tender*.

After an ineffectual employment of the taxis, the importance of the case was explained to her, and a tardy consent to the performance of an operation obtained.

The operation presented no difficulties ; the strictures (Gimbernat's ligament) was divided, and the intestine (which was of a chocolate colour, but firm) returned. Take two grains of grey and two of Dover's powder every four hours.

Second day.—The pain in the abdomen has materially abated ; the vomiting has ceased, but the bowels have not been relieved. Some heat of skin and thirst being complained of, salines were ordered in addition to the pills.

Third day.—The heat of skin and thirst have materially abated, but there has *not been any evacuation.*

Fourth day.—The bowels have acted twice ; the wound is agglutinated, and the pain in the abdomen is subsiding.

Sixth day.—Contrary to express directions, she yesterday ate heartily of fowl, and drank some gin-and-water. To-day she has had a ri-

gor, and the wound is erysipelatous. Poultice to the wound, and solution of acetate-of-ammonia mixture, with excess of ammonia, every four hours; omit pills.

Eighth day.—Pulse feeble, and erysipelas extending. To have wine and beef-tea, in addition to the medicine; the nitrate of silver was applied around the circumference of the erysipelas; the bowels are daily relieved.

Twelfth day.—The erysipelas has entirely subsided; the wound is healed, and she is convalescent.

The second case came under the care of Mr. William Pearse, of Marsham-street, Westminster. The patient, a healthy man, aged forty-two, consulted Mr. Pearse for an irreducible oblique inguinal hernia. The primary symptoms were not *very urgent*, and means both by taxis, warm-bath, bleeding, and the administration of purgatives, were had recourse to. No relief being obtained, but, on the contrary, obstinate vomiting supervening, on the third day I was requested to see him. The protrusion was of a moderate size, and of the oblique inguinal kind, painful, and the abdomen somewhat tympanitic; tongue foul and loaded; pulse 120. The tenderness of the tumour precluding any manipulation, he was placed under the influence of chloroform, and the operation commenced. The different layers having been divided, the intestine was exposed, and the stricture, tight and unyielding, was detected at the external abdominal ring; this was cautiously divided, and an endeavour made to return the intestine. It was, however, evident that some further obstruction existed; and upon running the finger along the protruded bowel, a second stricture was detected at the internal ring. The inguinal canal being now incised sufficiently to permit its division, the intestine was returned without difficulty. Two grains of mercury-with-chalk and two grains of Dover's powder were ordered to be taken every four hours.

On the following day the pain and sickness had abated, but there had not been any action of the bowels. On the third day he passed some flatus per anum, but there was no relief from the bowels. Continue pills.

Fourth day.—He is tranquil, and the pain is much relieved; still *no action of the bowels*. To have a warm-water injection, and continue the pills at longer intervals.

Fifth day.—*The bowels have acted twice.* There is some swelling about the testicle, for which a poultice was applied. The pain in the abdomen having subsided, he was desired to omit the pills.

Tenth day.—With the exception of a small abscess in the testicle, he has proceeded most favourably; all medicines are continued, and he is taking chop and porter.

Twentieth day.—The wound has slowly granulated, and he is quite well.

The third case was in a woman admitted into the hospital under my

care, with strangulated femoral hernia of the left side. The protrusion was first detected six months since, but up to the present time offered no obstacle to reduction. During a violent fit of sneezing, the intestine became protruded, followed in a few hours by sickness and pain in the abdomen. The taxis was tried, and purgative medicine administered without effect. Upon admission into the hospital she was placed in a warm bath, and the taxis fruitlessly employed. As the tumour was not very tender, nor the symptoms urgent, she was ordered ten grains of calomel and colocynth, to be followed by a purgative draught, together with an injection of ordinary house medicine. In the evening the injection came away, unaccompanied by fæcal matter; the sickness continued, and the abdomen was more painful. Take forty minims of Battley's solution of opium.

Second day.—The opium quieted the sickness during the night but it returned this morning, and is becoming stercoraceous; the abdomen is painful and tympanitic; pulse 104; skin hot, and she is thirsty; no relief from the bowels of either flatus or fæces.

The operation was perfectly easy and straightforward; the intestine *was very much congested*, but not gangrenous; the stricture tight, but easily divided, and the intestine and omentum returned. Take calomel two grains, and opium a quarter of a grain, every four hours. In the evening the bowels acted three times, and the sickness had entirely ceased.

Third day.—The night was tranquil; pulse 90; skin hot; there is considerable tenderness over the abdomen. Continue pills, and apply turpentine fomentation.

Fifth day.—There is an erysipelatous blush around the wound; the bowels act naturally, and the pain before complained of is confined to that portion of the abdomen immediately above the wound; pulse 84, and feeble; tongue white. Take an ounce of brandy mixture every four hours. Beef-tea and arrowroot. Omit pills.

Seventh day.—The erysipelas has subsided, the tenderness has decreased, and she expresses a desire for food. Chop, four ounces of wine, and arrowroot.

Tenth day.—The wound has nearly healed, her bowels act daily without medicine, and she is progressing favourably.

Twelfth day.—She was yesterday attacked with acute bronchitis; and this morning, while coughing violently, felt something give way, when, upon examination, *fæcal matter* was perceived oozing through the minute opening which had not yet healed. Her skin is hot, tongue foul, pulse 120, and aspect depressed. Take a diaphoretic mixture, with five dorps of tartarized antimony wine every four hours. The surrounding skin to be protected by soap strapping, and a poultice to the wound.

Thirteenth day.—Much improved; the fæcal escape is trifling, and the bowels continue to act per anum.

Fourteenth day.—The escape of fæces has ceased, the bowels act per anum, and her cough is better.

Twentieth day.—The bronchitis has been general and severe, but yielded to active treatment; the wound has entirely healed, and she will leave the hospital in a few days.

The fourth case occurred in an old lady, aged sixty-five, a patient of Mr. William Pearse. She had been the subject of inguinal hernia fifteen years; she never wore a truss, but previous to the present attack had not suffered inconvenience. Three days prior to my seeing her, the swelling became increased in size, and the bowels were constipated; vomiting subsequently supervened, and speedily became stercoraceous: there was general tenderness, tympanitis, and the tumour would not bear handling; the taxis and all available means having been employed without success, the operation was proceeded with.

The tumour was large, elastic, and apparently contained both intestine and omentum. The integument and fasciæ being divided, the sac presented itself, and bore so accurate a resemblance to intestine, as to render it a matter of difficulty to visually determine its exact character. No convolution being detected, a small opening was very carefully made, when omentum presented itself, and upon examination was found generally adherent to the sac. A few adhesions having been divided, the intestine was sought for, and a small knuckle detected, behind a large mass of strangulated omentum, at the internal abdominal ring. The stricture was divided, and the intestine returned; the omentum being gangrenous, was left in situ. Poultice to wound, and take two grains of calomel and a quarter of a grain of opium every four hours.

On the day following, she had general fever, tympanitis, and the bowels had not acted. Continue pills, and apply turpentine fomentation.

Third day.—The bowels have acted three times; in other respects improving.

Seventh day.—The fever is gradually subsiding, and portions of omentum are daily detached. Improve diet.

Fifteenth day.—The omentum has all come away; the wound is healthy, very much contracted in size, and she is enabled to leave her room.

Twenty-fifth day.—The wound has entirely healed; there is no tendency to protrusion, and the omentum, which had protruded for fifteen years, is entirely removed.

The fifth case was a patient of Mr. Whitney's, of College-street, and occurred in a lady, aged seventy-five. She had been for many years the subject of femoral hernia, but had never suffered inconvenience until the present time. The bowels have not been relieved for three days; the vomiting is stercoraceous; the abdomen tender and tympanitic; and she is somewhat collapsed. Mr. Whitney having employed all the ordinary measures without success, the operation was proceeded with. The integument and fasciæ being divided, the sac was cautiously opened, when omentum and intestine presented.

The stricture was very tight, and formed by Gimbernat's ligament; this was partly divided and the protrusion returned. The same treatment was adopted as in the former cases. The sickness subsided upon the return of the intestine; some flatus was passed on the following day, but the bowels were not relieved until the second day after the operation. The wound healed by the first intention, and she recovered without a bad symptom.

The sixth case came under the notice of Mr. Beck, of the Westminster-road, and occurred in a woman aged forty, who had been the subject of femoral hernia for some years. For nearly twelve months prior to the hernia becoming strangulated, she had been suffering from obscure disease of the abdomen, which, at the time of the operation, contained a moderately large quantity of fluid. The strangulation was of three days' duration, during which period all means short of an operation were had recourse to without avail. At the time of her admission she was in great pain; the vomiting was almost incessant, and the countenance *anxious* and *pinched*. She would not consent to any operation. Take two grains of calomel and half a grain of opium every four hours: turpentine fomentation to abdomen. On the following day, the symptoms being aggravated, she consented to the operation, which was immediately performed. A large quantity of fluid escaped from the abdomen; the intestine was very much congested: it was returned, and the edges of the wound retained by suture, fluid continuing to escape. Continue calomel and opium, and apply fomentation. On the following day, the vomiting had entirely ceased and the bowels were actively moved three times. Take mixture of chalk and opium every four hours. Continue pills.

Second day.—No purging; less tenderness, and is generally better.

Third day.—Mouth becoming sore; bowels twice relieved; abdomen but slightly tender. Omit pills.

Fifth day.—Wound nearly healed; all peritonæal symptoms have subsided.

Tenth day.—Left the hospital quite well.

The last case occurred in an old man who was admitted under my care, with a very severe injury to the head. The hernia was of the femoral kind, and had existed for twenty years. Five days prior to the operation the intestine became strangulated, and the symptoms increased in severity until the vomiting assumed a fæcal character. The pulse was feeble and frequent; skin covered with a clammy perspiration; great tenderness over the abdomen and tumour; general tympanitis and constant hiccough. The operation was immediately performed, and the intestine detected (behind a portion of omentum) in a highly congested state; being firm it was returned, but the omentum, looking gangrenous, was retained. Take twenty drops of tincture of opium. In the evening the bowels had acted three times, and he had been sick once. Pulse 150, and skin hot. Take an ounce of chalk mixture, with ten drops of tincture of opium and half a drachm of tincture of kino, every three hours.

On the following day, the pulse was 110, and feeble; skin less hot; no further action of the bowels; abdominal tenderness slightly increased. Take two grains of calomel and half a grain of opium, every four hours. Turpentine fomentation to abdomen.

On the third day, the bowels were once open, the pain and tympanitis being unrelieved.

Fifth day.—The tenderness is extreme; the intestine in coils, and tympanitic; the tongue covered with a thick fur; and the countenance anxious. Continue pills, and rub in mercurial ointment.

Seventh day.—He is much improved, the pain is mitigated, and he lies on his side; stools natural; tongue more clean; pulse 98. Omit pills. Continue ointment and mixture once a day.

Tenth day.—The omentum is gradually separating, the peritonæal symptoms have yielded, and he is eating chop diet.

The foregoing cases are interesting, and embrace some of the difficulties met with both in the treatment and operations for herniæ. *In all*, the vomited matter was stercoraceous, and the operation postponed beyond the limits of prudence. In the first case, the intestine had been strangulated for *ten days* prior to medical aid being sought; and the further imprudence of the patient afforded a good exemplification of the irritation produced by the introduction of stimulating food and drink at a period when the system was unable to bear it. In the second, a somewhat unusual complication was met with in the intestine being strangulated at both rings, the slight disturbance of the spermatic cord causing abscess of the testicle. The third case was one of peculiar interest, from the bursting of the intestine on the twelfth day after the operation. There is little doubt but that the strangulated portion was very *severely nipped*; and although it would in all probability have recovered its vitality, or been sufficiently repaired, yet it was unable to withstand the violent impulse of coughing consequent on acute bronchitis. The external escape of the fæcal contents affords another illustration of the wise provision of nature in the deposition of fibrine, and detention of the injured intestine in immediate apposition with the wound. Had the intestine not been thus adherent, the contents must have escaped into the cavity of the peritonæum, and the patient in all probability been destroyed. The fourth was of the oblique inguinal kind, and occurred in an old lady, in whom a large mass of omentum had been protruded for very many years. The difficulty, in this operation, was to find the intestine; the omentum was so generally adherent to the sac, and the knuckle of intestine so small, that many bands required incision prior to the stricture being divided. The constitutional disturbance was very trifling, although a very large mass of gangrenous omentum eventually sloughed away. The fifth case was somewhat remarkable, from the absence of any symptom interfering with rapid recovery; although the vomiting was stercoraceous, the abdomen very tender, and the prostration great, yet she recovered without an untoward symptom, and the wound healed by the first intention.

In the sixth case, there had been long-continued disease of some portion of the alimentary canal, the peritonæal cavity contained a considerable quantity of fluid, and the operation was postponed beyond the limits of prudence. After the operation, there was great tendency to diarrhœa, which being, however, speedily checked, she happily recovered in a few days. The last case was severe both prior to and after the operation. The patient was in the worst possible condition for an operation; and the subsequent severe peritonitis unquestionably placed his life in danger for some days.

Some difference of opinion may exist as to whether the omentum should be removed or not; but as I have never seen any ill consequences arise from the omentum being left, and as probably by its adhesion to the abdominal or femoral ring a barrier is offered to any further protrusion, I prefer leaving it, to running the risk of blood escaping into the peritonæum, and probably causing peritonitis.

In conclusion, I venture to confirm the practice of other surgeons, in reprobating all interference with the alimentary canal by the exhibition of purgatives, but confine myself to the proper treatment of any complications that arise. The surgeon being assured the operation has been properly performed, no uneasiness need be manifested at the want of action in the bowels, the subsidence of vomiting and escape of flatus being a sufficient guarantee that all mechanical obstruction is removed.

---

*Malignant disease of Testicle; Operation; Return of disease after two years; Death.* By William Tiffin Iliff, Esq., Jun., Kensington.

(Lancet, Jan. 15, 1853.)

Mr. H——, a barrister of eminence, aged fifty-one, married, a tall, fine man, always enjoying excellent health, remarked in the early part of July, 1849, a swelling of the right testicle, without any signs of inflammation, and no inconvenience further than occasionally a sort of dull sensation scarcely to be called pain. Neither inequality of surface nor fluctuation was perceptible: the skin was not adherent, nor the veins enlarged; and by transmitted light the presence of fluid was dubious. No cause could be traced: its increase however, though slow, was yet marked. A strong evaporating lotion was first applied, the testicle being suppported by a suspensory bandage; and afterwards inunction with the biniodide-of-mercury ointment with camphor was practised. On the conclusion of the circuit he came to London, and during the months of October and November my father took him to several of our leading surgeons; the general opinion was unfavourable, but all coincided in the internal and external use of iodine and mercury. Salivation was with difficulty effected, and then was sudden and severe. No good result followed; for though the health continued

perfectly good, the testicle gradually increased. On the 17th of November, Sir B. Brodie saw him, and introduced an exploring trocar (into the body of the diseased testicle, as it proved on examining it after the operation): a very small gush of bloody fluid followed. Sir B. Brodie considered that the testicle had undergone a morbid change of a suspicious character, and advised its early removal. The operation was, however, deferred for a short time, in consequence of the legal engagements of our patient being both numerous and important.

Dec. 16th.—Mr. Lawrence removed the testicle this morning in the usual way; the cord was perfectly sound, and no diseased glands could be detected. Mr. Holmes Coote had first administered chloroform with a proper apparatus: its effect was slow, and first evidenced by great jocoseness of manner; gradually he seemed to lose control over his mental powers, and the countenance becoming suffused, it was deemed prudent not to continue its application to full anæsthesia. He struggled violently during the operation, so as to require increased aid to keep him still, and he cried out vehemently whenever the knife was used. A state of syncope succeeded before the sutures were applied, from which he soon rallied by cold air and water, and diffusible stimuli to the nostrils. The edges of the wound were now united by suture, the pain of which he bore quietly, as the effect of the chloroform had quite passed off. He ever after denied having felt any pain during the operation, the introduction of the sutures after the syncope alone excepted. So rapidly did union take place, that on the eleventh day he was allowed to go out of town to his country seat. The testicle presented an unequivocal specimen of the malignant disease called fungus hæmatodes, medullary or cerebriform disease.* From this time he continued in full and perfect health and vigour. In June, 1851, he complained of stuffing and uneasiness in one nostril, which was found to depend on a simple polypus with rather broad base, which was removed by Mr. Partridge.

In the early part of December, 1851, he felt a slight rheumatic pain in the back, which was soon relieved by an anodyne embrocation and belladonna plaster. The day after Christmas-day, however, he first experienced a sort of pain down the left thigh, and in a day or two the leg was observed to be swollen, though almost entirely about the femoral region. He came to town and consulted my father, who, regarding his condition with much anxiety, requested the opinions of Mr. Lawrence and Sir B. Brodie. The reappearance of the disease was of course feared. The inunction of the hydriodate-of-potash ointment was recommended, and the internal use of the same salt. His general health was excellent, and spirits good. The measurement of the left thigh, a foot from the centre of the patella, was, as compared with the right, as 23 inches to 21; it increased gradually to 25 inches. The glands did not feel enlarged, and it seemed a condition of œdema

* It is, I believe, in the museum of St. Bartholomew's Hospital; and this case has been alluded to by Mr. Lawrence in one of his Clinical Lectures.

solidum. The swelling descended lower by degrees, until the end of February, when it was at its height, the whole leg being affected. The right foot and ankle were also at this time somewhat œdematous, and there was a very slight uneasiness in the course of the superficial veins in the right inner thigh. His general health had continued on the whole good, but he had lost all relish for wine. His bowels acted regularly; urine free, subacid, not coagulable, 1020; containing lithic-acid crystals. Pulse 110 to 100. He had continued the internal use of hydriodate of potash, and taken it in full doses of sarsaparilla at Dr. Elliotson's suggestion. Externally the inunction had been persevered in all over the leg. Rest of the limb was strictly carried out, and though he continued his forensic duties, he always addressed the jury sitting, so that with the exception of feeling cramped and stiff, he appeared none the worse for his attendance in court. About the first week in February the penis and scrotum became very œdematous; a suspensory bandage was used, and after a few weeks the swelling almost entirely subsided, though in the early part of March it was extreme. Gentle friction with soft flannel was substituted for the ointment, but even this proved too irritating, and gave place to simple oleaginous rubbing. On the 8th of March, Mr. Fergusson's opinion was sought. He remarked that the symptoms of this last attack were not the usual ones which indicated the reappearance of malignant disease; they more resembled chronic phlebitis. But the condition of the removed testicle left too much cause to fear that it was the former state. He suggested (as the kidneys appeared sound) trying diuretics in the shape of acetate of potash, with spirits of nitric ether; in other respects supporting the general powers. The pulse was now below 100, and his health began to fail; he had always been cognisant of his perilous condition, and as fresh opinions were sought, and one by one proved unfavourable, so were his anxieties increased, though he bore his illness with fortitude and resignation. The secretion from the kidneys was not increased; the bowels soon became more sluggish, the stomach more delicate and fastidious, and the appetite failed; but the legs materially decreased in tension and hardness. At this time he was attending the circuit. On his return, to the former opinions were added those of Mr. Fisher, an old friend of his, and Mr. Martin, late of the Indian army.

As however the local symptoms subsided, so did the general health fail; nausea was much complained of, and he felt a dull pain in the right loin towards the end of April, for which a few leeches were applied; the pulse had fallen to 84, and was somewhat feeble. He was at last obliged to give up attendance in court, and shortly took to his bed.

On May 2nd, at half-past seven A. M. a note was received by my father, stating that our patient had passed no urine for twenty-four hours, and was very uneasy. On my father's visit, although no tension of the bladder could be felt, he deemed it prudent to pass a catheter, but only a few drops of urine passed. The pulse was 84; tongue

moist; bowels open. Very little pain, and no head symptoms. In the afternoon we met Dr. Bright and Mr. Fergusson there, and no glandular enlargement or other disease could be detected in the abdomen (the parietes of which were dense and fatty). He was cheerful, and his aspect then brightened up. Hot poultices continually to the lions, and diuretic drinks ordered. The suppression continued, and the nausea increased; there were generally from two to four dark, liquid evacuations daily; the tongue began to dry, so that ammonia, &c., was given. On the 7th, as he complained of increased pain in the right loin and aching down the right leg, he was cupped to four ounces. His pulse had now fallen to 72. On the afternoon of May 18th his end was evidently approaching; he remained perfectly sensible until a little after one A. M., May 11th, when he became suddenly unconscious, and died in less than twenty minutes.

The necropsy, thirty-nine hours after death, was kindly conducted by Mr. Callaway. The body was well nourished; there was a cicatrix over the right inguinal region, and the left leg was œdematous. Upon opening the abdomen, the intestines were found lying in front of a large irregular white mass; as the duodenum crossed in front of this, it was adherent to it by its posterior surface, so also was in some degree the pancreas. The intestines were removed and found healthy; a few old membranous bands were observed in the right inguinal region. The mass now discovered occupied the entire front of the bodies of the lumbar vertebræ, to which it was most closely adherent; it extended on either side along the brim of the pelvis, surrounding and involving the iliac vessels, which were healthy; it encroached upon the kidneys, covering and investing the emulgent vessels; the ureters were imbedded in the mass, their coats thickened, but they were previous. Upon cutting into the tumour it was found to consist of conglomerate masses of white brain-like or creamy matter, interspersed with firmer portions of more solid and yellow material. The bladder was empty. Both kidneys were exceedingly soft; the left small, and showed much white inflammatory deposit; the right was large, coarse, and healthier. The left testicle was healthy. Liver healthy. Spleen very soft. Heart large and soft; cavities large; walls thin; valves healthy. The lungs were slightly emphysematous: an old cicatrix at apex of right lung, and some old pleuritic adhesions on the same side. No trace of malignant disease in the bronchial glands, nor in any of the viscera.

*Remarks.*—We have here an excellent instance of the insidious nature of malignant disease, as occurring in a constitution apparently as little disposed to such action as could well be imagined: the operation was conducted under the most favourable circumstances, no trace of other ailment existed, and two years pass without a sign of its return, which, when it did take place, pursued its fatal course, baffling all efforts to restrain it. That the operation was successful and justifiable, I think cannot be doubted; had it not been performed, we could

scarcely have anticipated that our patient would have lived two years and half, and that, too, with but little suffering. The effect of the administration of chloroform was curious; it appeared to deprive him of all control over himself, and to destroy the recollection of pain, and not the suffering itself, for his exclamations were vehement and struggles great whenever the knife was used. The good, however, it did effect, that as, being fully convinced of the anæsthetic power of chloroform, he in no way dreaded the operation, so did no painful recollections exist after it had taken place. The symptoms and progress of the last attack are not devoid of interest. The disease appearing in the lumbar glands (probably at first chiefly on the left side), and interfering with the iliac veins, &c., gave rise to the œdema of the left leg, which increased at length to such a degree, that the skin below the knee seemed stretched to its extreme limit, and shiny. Some alteration in the position of the mass probably relieved the vessels, or some compensating influence was brought into play, and the œdema lessened again, so that not only was the size of the leg diminished, but its tension was remarkably so. The connexion of the duodenum, &c., with the mass, no doubt aggravated the nausea, and at length the action of the kidneys became interfered with and stopped by the pressure on the renal vessels; doubtless the bowels acting so feely, played an important part in carrying off the effete matters of the blood, and prevented head symptoms, but the system was unable to contend with this fresh manifestation of disease, and death at last resulted. Before concluding, it may be remarked, that it was not until the day before he died, that any abnormal tumour could be detected in the abdomen, though he had been frequently and carefully examined; the abdominal parietes, however, were very firm and thick, and scarcely any emaciation had taken place.

---

## *On Cancer.* By M. Lebert.

(Lancet, Feb. 26, 1853.)

M. Lebert, the author of the well-known work on Cancer, lately read a paper before the Surgical Society of Paris, on Fibro-plastic Tumours. The principal facts and conclusions brought forward by M. Lebert are the following:—

1. Fibro-plastic tumours are composed of a cellular texture of new formation, similar to that seen in embryonic life. Fibro-plastic tissue may have an inflammatory origin, it may be the result of hypertrophy, or arise quite spontaneously.

2. Fibro-plastic tumours are made up of a soft lobulated tissue, of a pinkish yellow; or else of a firmer texture of a pale hue, and more homogeneous; or, finally, of a mixture of a gelatiniform substance with the two structures just mentioned. These tumours are situated in the skin, or the subcutaneous areolar tissue; they may be buried in the depth of the muscular masses of a limb, especially the thigh; or

else they may spring up in bone, a favourite seat being the jaws; or finally, they may grow upon the meninges.

3. Fibro-plastic tumours present the same characters in man and in domestic animals.

4. The Fibro-plastic texture, which owes its origin to inflammation, has a marked tendency to fibrous transformation; it is often met with in protracted inflammations, of which it is at the same time the support and the produce.

5. Fibro-plastic tumours present either a smooth or lobulated surface, and are either globular or flattened, according to their seat, and in cases of hypertrophy they assume the shape of the affected organ. They are generally free and well-defined, but when springing from bone they are sessile, and look like excresences.

6. These tumours may become very large, both in glandular organs and when seated on limbs, especially when they contain much gelatiniform tissue. They are generally surrounded by a fibro-cellular envelope. When a section is made in a recent case the liquid obtained is clear and transparent; but it is sometimes thick and dull, when flocculi or entire lobuli are suspended in it. Besides the textures above mentioned, there is sometimes found in the tumours a substance of a pale yellow, and quite dull; sometimes calcareous concretions are found, or else osseous radiations, when the disease begins in the periosteum.

7. Under the microscope, cells with small, rounded, or ovoid nuclei are seen, and all the forms intermediate between the cell and common fibre, especially a great many narrow fusiform bodies; the nucleoli are always very small. There are also perceived original cells with compound nuclei rolled up together, and sometimes fusiform nuclei which then constitute fibro-plastic masses.

8. As regards neighbouring textures, fibro-plastic tumours grow like fibrous tumours, as they press upon these textures without taking their place; whilst cancerous tumours substitute themselves in neighbouring parts. Fibro-plastic tumours follow, as to their growth, the following development:—There is first a local deposit; the increase is then slow, but soon becomes rapid; phlegmasia takes place; then come hæmorrhage, partial calcification, softening, the formation of cysts, partial ossification, ulceration, and then, in exceptional cases, sloughing.

9. Both sexes are obnoxious to these tumours; they are seen at all ages, but they arise more frequently between thirty-five and fifty years.

10. Recurrence after operation takes place, especially in autogeneous tumours, and has not been observed in fibro-plastic hypertrophy; recurrence is not observed, as in the cancer, to arise in distant organs, though it is often caused by an incomplete operation. Notwithstanding the occasional pertinacity of fibro-plastic tumours to recur in the

cicatrix, they are not found to injure the general health. In very rare cases a kind of fibro-plastic diathesis becomes established; this fact has, however, been observed with fibrous, adipose, neuromatous, and melanotic tumours.

11. Singleness and a strictly local nature have been observed as a rule in fibro-plastic tumours. This fact is proved by twenty-six carefully conducted autopsies of cases in which the disease had reached its natural termination, and also by a considerable number of perfect and permanent cures after operation; whilst no such cures are known to exist respecting true cancer.

12. Fibro-plastic tumours have a much more chronic character than cancerous tumours; and save a few cases of very rapid growth, it may be said that fibro-plastic tumours, when they become fatal, last rather more than between five and ten years; whilst the natural duration of cancer is from two to two years and a half. Cases have even been known, and are not rare, in which fibro-plastic tumours have lasted twenty years and more, without much inconvenience. It should, however, be mentioned that these tumours, after a very slow progress, have rapidly assumed a very serious character.

13. Pain is very rarely acute and permanent, and is mostly, as in other tumours, of a neuralgic kind. Functional disturbance depends principally on the seat of the tumour. The general health, in the great majority of cases, remains undisturbed, except in the very rare cases of general fibro-plastic infection, or those in which the local affection has ended in extensive ulceration.

14. The prognosis of fibro-plastic tumours is much more favourable than that of cancer. Curability is the rule. The fibro-plastic texture of inflammatory origin is the more likely to be benign the more it shows a tendency to assume a fibrous character. The prognosis is, in fibro-plastic hypertrophy, likewise favourable. In fact, these tumours constitute a local affection little or not at all likely to recur, which can only become dangerous in so far as its seat, extent or amount of ulceration are concerned. Kelis is likewise an affection of a simple kind (see "Mirror of Hospitals," The Lancet, vol. ii., 1852, p. 567,) notwithstanding its pertinacity regarding recurrence in the cicatrix after operation. Fibro-plastic tumours of spontaneous origin are very likely to recur after excision, when they are situated on the tegumentary surface, under the skin, or in the bones. The surgeon should always bear in mind the possibility of general infection, only, however, as an occasional occurrence, but not as a probability. Fibro-plastic tumours seated in the meninges destroy the patient by interfering with the functions of the brain, though remaining all the while a perfectly local affection.

15. The treatment of these tumours should begin with the prolonged use of preparations of iodine, when the origin is of a syphilitic nature, or when the tumour is simply owing to hypertrophy. When

an operation is necessary, it should consist, as a rule, of complete extirpation; strong caustics should be tried with superficial tumours of small dimension. Operations in such cases should always be performed boldly, whether the knife be carried into soft parts, or whether the affection be seated in bone. Amputation should be performed when the tumour is situated in the depth of the limb and the former sends prolongations into parts where dissection is difficult.

Autoplasty should be used to substitute healthy tissue to cicatrices likely to favour recurrence, in operations of a moderate extent, and the tumour is seated on the surface. The actual cautery is necessary when superficial tumour are too extensive to admit of autoplasty.

It is finally advisable to use iodine *after* operations, as a prophylactic means against recurrence or general infection.

---

## *Cancer of the Breast.*

(Medical Times and Gazette, Jan. 22, 1853.)

Susannah Pickburn, aged 60, applied to Mr. Childs in August last, with cancer of the left breast. About eleven years since, she first discovered a small red spot over the left nipple, of which she took little or no heed. In the course of three years this was attended by a circumscribed movable induration, situated near to the axillary border of the gland, which gradually increased until it attained the size of a pullet's egg. At this period the breast became swollen, of a livid hue, and the superficial veins grew varicose and enlarged. Although at first there was little pain or inconvenience attending the tumour, it became affected with paroxysms of a severe lancinating character, and the use of the left arm was much impaired. Four years subsequently, and seven from its commencement, the breast had become almost of a purple colour, the nipple had lost its natural prominence, and was sunk considerably below the level of the surrounding skin—the latter being puckered and furrowed. The pain now was of so severe a character, that she was induced, for the first time, to seek medical aid; but, having been advised to have it amputated, she, from scruples of her own, refused to undergo the operation. Nothing, therefore, was done, and the disease was allowed to take its course. In about two years the skin corresponding to the most prominent part of the morbid growth began to ulcerate, a thick crust covered its surface, accompanied by an oozing from beneath of a thin sanious discharge. This scab fell off and left a deep sloughing hæmorrhagic ulcer, which bled for three or four days consecutively. It increased rapidly, and, at the time she consulted Mr. Childs, measured about three inches in diameter. The appearances it then presented were of such an alarming character, that Mr. Childs entertained but slight hopes of effecting any good by treatment. Its edges were elevated and everted, the surrounding integuments greatly swollen, and of a

dark reddish colour, and sloughing was going on to a considerable extent. The odour was most offensive, so much so that her presence even was disagreeable to her friends. She suffered intensely from anxiety of mind, and the pain and discomfort attending the disease. Such being the state of things, Mr. Childs was induced to try what could be effected by the application of the acid nitrate of mercury, having obtained the most happy results from the employment of this caustic in the sloughing phagedæna of syphilis. The whole of the ulcerating surface, as well as the edges, were freely touched with the caustic, and this was repeated three or four times, allowing an interval of some days to elapse between each application. The sore was washed daily with a lotion composed of two drops of nitric acid and twenty of opium-wine to an ounce of camphor-water, the whole enveloped in a carrot-poultice; and a pill composed of one-sixteenth of a grain of iodide of arsenic and three of extract of poppies was ordered to be taken three times a day, which had been continued up to the present time, omitting it only at periods when it appeared to produce gastric irritation. In about a fortnight, Mr. Childs had the satisfaction of seeing healthy granulation springing up, and cicatrization commencing from the edges of the ulcer. This continued until about the middle of November last, when the whole of the sore had healed, cicatrization was completed, and was in the state in which he had the pleasure of exhibiting it to the Fellows of the Society. Immediately the ulcer had assumed the healthy aspect referred to, it was freely painted over with a solution of gun-cotton, and afterwards enveloped in fine carded wool. He (Mr. Childs) would not presume to say that the case was thoroughly cured, nor could he offer any guarantee against a return of this formidable disease; but he considered it to be one of sufficient interest to demand the attention of the Fellows, and to be recorded in the Minutes of the Society. He believed that there were cases on record of spontaneous elimination of cancer, such as those referred to by Nicod, Bayle, Dupuytren, Richeraud, Cruveilhier, and amongst our own countrymen, Cline, Sir Everard Home, and others, in which a total separation of the morbid growth induced by spontaneous sphacelus, had been followed by complete recovery. Mr. Travers also relates the case of a female falling under his notice, in whom a large scirrhous tumour was effectually absorbed by a solution of chloride of lime. He (Mr. Childs) was not prepared to say how much of the success attending this case was dependent upon the internal administration of the iodide of arsenic, or how much upon the local remedies he had employed; these were questions which it was impossible to solve; but thus much he was prepared to say, that the success attending the combined treatment, in the present case, afforded him some hope, that, in patients with whom the cancerous cachexia did not predominate, much good might be done towards relieving their sufferings, or as probably in the present instance, eradicating the disease from the system.—*Proceedings of the Medical Society of London.*

## *Upon Cystic Swellings.* By Dr. PETRALI.

(Medical Times and Gazette, Feb. 5, 1853.)

Cystic swellings, with watery contents, occurring in the neck, arise either from the thyroid body, (where they have been described by Porta under the name of "hygroma,") or from other structures in the neighbourhood of the larynx or trachea; in which case they have received from Maunoir the name of "hydrocele colli." The author relates the particulars of two cases:—A strongly-built man, aged 50, had an elastic fluctuating swelling on the right side of the neck, composed in front of two lobes, and extending from the chin to the sternum; the skin was unaltered, but the tumour was rapidly increasing. The author performed the following operation: the skin was divided longitudinally over the tumour, when a shining tendinous cyst was exposed, and opened in its entire length; there flowed from it an orange-yellow, inodorous, clear fluid. Through a fold of membrane in the lower part of the cyst, the pulsations of an artery could be clearly felt; it was supposed to be the internal mammary, or one of its branches. The whole sac was filled with charpie, and the edges of the wound were united by adhesive plaster. Soon a second cyst began to show itself beneath the mastoid portion of the sterno-cleido, mastoideus muscle, extending from the os hyoides. The author divided the skin over the muscle, separated its fibres and the fascia under it, and then saw the cyst, as a wedge between the carotid artery and the nervus vagus on one side, and the jugular vein on the other. An assistant dragged aside the artery and nerve with a hook, while the author made an incision into the cyst, whence flowed a quantity of limpid fluid. He then, by means of a trochar, made the two cysts communicate, and introduced a seton. Some other cysts were subsequently opened in the middle of the neck. The patient recovered.

A girl, aged 20, came to the author (August, 1843) with an elastic swelling in the right supra-clavicular region, extending from the cornu of the os hyoides and thyroid cartilage to the posterior border of the sterno-mastoid. An incision being made over the tumour, there was exposed an elastic and livid, but pulseless cyst, whence flowed a quantity of rusty-brown coloured fluid. The cyst contained some pale-red jelly-like substance, resembling coagulated fibrine. The cavity was filled with charpie. The discharge, at first bloody, became in a few days purulent. Iodine injections were used, and the patient recovered after a protracted convalescence.

The author thinks iodine injections most useful when the cyst is single, has no pouches, contains serous fluid, and can be punctured in its most depending part.—*Gazz. Tusc.*, 11; 1851.

---

## *On the Mortality arising from the Use of the Forceps in Tedious Labours.* By G. HAMILTON, M. D., Falkirk.

(British and Foreign Medico-Chirurgical Review, April 1853.)

About twenty years ago, immediately before settling in this locality,

I received some practical instructions in the use of the forceps in protracted labours from Dr. Reid, of Edinburgh, who was known to the profession as an experienced and extremely dexterous manipulator in such cases; and I remember one of his remarks to have been, that, in a general practice, instrumental assistance might, he thought, be given with advantage much oftener than was then usual, especially when a certain amount of dexterity in the use of the forceps had been acquired. After entering upon the duties of the profession, I became convinced that Dr. Reid's views were correct; and upon talking over the subject with some intelligent medical friends, who had had a large amount of experience as accoucheurs, I found them much inclined to favour the same opinion. From that time until the present, my feeling has been, that similar views had gradually been gaining ground among intelligent general practitioners.

The population among whom I practise is generally robust and healthy, and is composed partly of the upper and middle classes, and partly of the working agricultural and manufacturing classes.

The following are the statistical results,

1st. There were 305 children, 5 of the labours having yielded twins.

Of these 305 children, 8 were dead at birth; 5 being putrid when born, and 1 having been destroyed at the commencement of labour, in a case of placental presentation. Of the other 2, 1 almost certainly died before the labour began. The remaining case formed a breech-presentation, in which considerable force was required to deliver the head. Setting aside, therefore, as seems fair, the first 7 cases, the mortality to the children at birth, from the labour process, was 1 in 298.

2nd. In the 300 cases the forceps were used 41 times—rather less than 1 in 7; and all the children were born alive.

3rd. Of the whole children born alive, 10 died within about a week; 6 having been delivered naturally and easily, and 4 with forceps. Of the former, 2 were certain to have died, of the latter 1, from being premature. We have thus, of children that might have lived, 4 in 256, or 1 in 64, dead within a week, where the labour was natural; and 3 in 41, or about 1 in 14, where the forceps were used.

4th. The forceps were applied chiefly in first labours, and in females who had a particular form of pelvis. Thus, 10 primiparæ were so delivered; and among 7 other females they were used 17 times during the period included in the enumeration. If these 27 are deducted, we have the forceps used, in the remainder, in 1 in 21.

5th. The labour-process proved fatal to 3 mothers, or to 1 in 100, in all. Of these, 1 had a natural labour, and the other 2 were delivered with forceps. The mortality to mothers was thus 1 in 259 where labour was natural, and about 1 in 20 where the forceps were used.

6th. In none of the cases did any local injury to the parts occur from the use of the forceps.

The mortality to the children, from the labour-process, we thus find to be, under the treatment pursued by me, 1 in 298; while Dr. Clay gives the mortality to the children in the Dublin Lying-in-Hospital, in 156,100 cases, as 1 in 17; Dr. Simpson, in the Edinburgh Maternity Hospital as 64 in 1417, or 1 in 22; Dr. Lawrence, of Montrose, in a practice probably similar to my own, as 1 in 46.

How far the treatment I have employed influenced the results, may be judged of from the following short sketch of the plan I usually pursue, in ordinary cases of cranial presentation.

Labour is usually divided into three stages. For the sake of convenience, however, in speaking of my practice, I shall divide it into two portions, the first terminating when the os uteri has been dilated to about double the size of a crown-piece.

I have for many years been in the habit, as a general rule, to which, however, a few exceptions have occurred, of interfering very little with the first half of the labour process. In protracted cases of this kind, should the pains not be very urgent, I quietly allow nature to take its course, for twelve, twenty-four, or even more hours, contenting myself with, in some cases, giving an opiate, and especially abstaining from all forcing measures. I have not found, in my practice, the rule laid down by the late Professor Hamilton, that the first stage of labour should not be allowed to exceed twelve or fourteen hours, so urgent as was insisted on by him. With the precautions, which I shall afterwards mention, I have generally found that little more than annoyance to the mother results from a considerable extension of this rule. And here, I may remark, that it is of great consequence to keep in view, that delay in the first half of labour is by no means so dangerous as in the latter half; and hence, that an important exception must be taken to Dr. Simpson's statistical deduction, of the ratio of mortality increasing with the length of labour. *Cæteris paribus*, I have little doubt this rule would be found correct, were a sufficient number of cases accurately collated; but where cases are compared, in some of which the first half of labour was protracted, and the second short, while in others the reverse of this obtained, then the rule, it appears to me, is not correct, and is apt to mislead.

With the second half of labour I think commences the great danger from delay, and I therefore endeavour to shorten it as much as possible. My first efforts, in order to accomplish this, are directed towards clearing the head of the uterus. For this purpose, I rupture the membranes, if this has not already occurred, and support the anterior and lateral portions of the os uteri with my two fore-fingers during the pains, which are thus undoubtedly considerably increased in force and efficiency, until the uterus slips over the head. Where this cannot be easily effected with two fingers, I occasionally intro-

duce the whole hand into the vagina, and push up the uterus all round the head. In two or three of the forceps cases I have given, I did not succeed in this procedure, although the head had got pretty well down in the pelves; and in these I applied the instruments within the neck of the uterus, using the two four-fingers of my left hand for pressing the uterus upwards as the forceps brought the head down.

The uterus having slipped over the head, my attention is next directed to the precise position which the ear next the symphysis pubis then occupies in relation to it. If the ear is exactly opposite the symphysis, or slightly to either side in the wrong direction for making the turn into the hollow of the sacrum, I rarely put off much time before applying the forceps provided little or no alteration is taking place *in the position of the ear*. Under these circumstances, I do not allow myself to be deceived by the advance, or rather elongation and only apparent advance, of the head. When the ear does not indicate a revolution of the head, I feel assured that the labour will be a tedious and hazardous one, and generally within an hour, an hour and a half, or two hours, according as the severity of the pains and the nature of the case may seem to require it, I finish the labour by applying the forceps. Where the broad transverse form of the pelvis is decided, as in flat or squat-made females, where the ear is on the *wrong side* of the symphysis, where the pains are severe, but no progress is made, where the mother is a primipara, or where the first half of labour has been tedious, I feel that it is generally useless, and always hazardous, to lose much time, and I usually interfere at an early period. It will be observed that seven females furnish seventeen cases of application of the forceps. Now, all these have the broad, flat pelvis; and it is a common circumstance for such patients, who are aware, from previous experience, of the ease with which they can be relieved, to request that the forceps should be applied early, their own feelings making them sensible that no progress is taking place in the labour. In such cases, the pelves are often otherwise sufficiently roomy; and I have frequently little more to do than turn the head gently round, when the pains themselves effect the delivery in a few minutes. Some authors advise, when the head is placed transversely, that the fingers or hand should be used for the purpose of endeavouring to turn it round. In a very few such cases, since I have been in practice, where the pelves have been exceedingly large, or the children small, I have succeeded in doing this; but very generally I have found that no good can be effected with the mere fingers or hand in giving the head the proper turn, and I therefore never lose time in persevering in such attempts.

My endeavour, when using the forceps, always is, not simply to draw the head forwards, but also to make it perform the necessary revolution at the same time. Of the forty-one forceps deliveries which I have mentioned, speaking from recollection, I should say, that in at least eight-tenths the head was in the transverse position, or only

slightly deviated from it. The rectification of this unfavourable position, therefore I have found the most important point to which I have had to direct my attention in midwifery practice. When the child, even in an easy labour, is allowed to remain in this position above two hours, the danger to its life becomes imminent.

The remainder of the forceps cases was mostly of a more favourable character as to position, but required assistance, in consequence of the size of the child having been greater, or the pelvis less, than usual, or from the pains having been deficient in strength. The rapid deliveries which have been effected in this manner have almost removed, in my practice, one of the great sources of danger to the child, and of difficulty to the operator in applying the forceps. It is now several years since I have met with, among my own patients, a case of impaction from delay in delivery; and, except where there is a manifest disproportion between the size of the child and that of the pelves, I seldom take this into account as one of the difficulties I have to contend with.

It has been stated, that this practice has yielded as its result 41 consecutive forceps deliveries without one still-born child; and, principally as a consequence of its application, there is presented the extraordinary circumstance, of no case of cranial presentation having been lost by the labour process in 298 consecutive births. Even this statement, however, does not give the full success which has attended it. I go back to my 318th labour, and 44th forceps case, before I meet with a still-born child; and again, even this does not give the risk to the child as a consequence of the application of the forceps, for the head, in the instance referred to, was so enormous that I never could get them fairly applied. I therefore turned the child, and tried, ineffectually, to deliver in this way. To accomplish delivery the perforator had to be used.

The necessary inference which must, I think, be drawn from what I have stated, is, not "that it may be laid down as a rule that nearly one-fourth of the children delivered by the forceps are lost," but rather, that, when applied in sufficient time, the increase in the amount of mortality caused by their use is very small indeed. I think it clearly follows from the statements made, that it is, in such instances as have been referred to, the delay in the second half of labour, and not the application of the forceps, which is usually fatal to the child. A mere inspection of the figures showing the ratio of cases in which the forceps have been used will demonstrate that very different results might be expected. We see them used in the ratio of 1 in 120 by Dr. Lawrence, Montrose; 1 in 472 by Simpson; 1 in 617 by Collins; 1 in 553 by Ramsbotham,* with very nearly the same ratio of mor-

* Edinburgh Monthly Medical Journal, Nos. 29 & 32. Dr. Lawrence does not state the forceps mortality, but only the general result. I have here quoted from Dr. Simpson's table, as I find the mortality given. In the extract from the British and Foriegn Medical Review, however. Dr. Ramsbotham is stated to have used the forceps once in 729 cases, and Collins once in 684.

tality—viz., 1 in 4 or 5; while I have used them in 1 in 7 with no mortality, in 43 cases. We see, also, the result to the children upon the whole. Dr. Clay states Collins' mortality over all as 1 in 16; Dr. Simpson's, in the Report of the Edinburgh Maternity Hospital, is stated at 1 in 22; Dr. Lawrence gives 8 in 368, or 1 in 46; while I have 1 in 298. The favourable results obtained by me, I have already said, appear to me to have arisen from the second half of labour having been shortened; and my inference again therefore is not that "the use of instruments is to be discouraged in all but exceptional cases;" but rather, that they should be used sooner and much oftener than is generally done.

The mortality in my cases to the children born alive, but which died within a week after birth, was, of those born naturally, 6; and of these, 3 were premature. Of those delivered with the forceps, the mortality was 5; and of these, 1 was premature. Excluding the premature children, which could not have survived under any circumstances, the mortality was thus: in those born naturally, 1 in 86; in those delivered with instruments, 1 in 10. As the forceps deliveries were also, of course, those in which the labours were the most severe or protracted, the influence of the forceps in increasing the mortality was probably here, likewise, very small.

One consequence of pursuing the line of practice described has been, that, *for the accomplishment of labour*, I have latterly rarely used the secale cornutum. In these 300 cases I did not use it more than three or four times. In the first half of labour I have considered its use to be generally improper, having, as has been stated, usually left my patients at this period very much to themselves; and I have already remarked, that, with the precautions taken, I had seen no bad consequences follow. I do not, however, feel quite certain that this would have been the case had the ergot, or other means, been employed to force the uterus into premature action. In the latter half of labour I have also rarely had occasion to call its assistance. In almost every instance where the ear has been placed opposite or near the symphysis pubis (and which I have said constituted about eight-tenths of the forceps cases), I have omitted its use, considering that the forceps supplied more certain and safe means of delivery. I am now, indeed, in the habit of using it almost solely either in the first portion of the second half of labour, where the case has been very protracted and the pains have become inefficient, or in cases where the head cannot easily be reached by the forceps.

In conclusion, I may remark, that the rules for my practical guidance in the management of labour which I have followed, are compounded of a limited application of two principles adopted by different authorities. With certain practitioners, I have, under ordinary circumstances, left the first half of labour very much to nature; while, to the latter half, I decidedly object to the application of this rule:

on the contrary, in the treatment of this portion of labour I adopt the principle applied by Professor Simpson to labour as a whole, that the mortality will generally be in the ratio of the time it lasts; and I therefore adopt means for the purpose, as much as possible, of shortening it. The lives saved in my practice, compared with other mortalities which I have given, vary from nearly 2 to about $5\frac{1}{2}$ per cent. Anything approaching to this, even in a moderate private practice, would amount, in a series of years, to a large total; to the bulk of the population of a country in the increase would be enormous.* The importance of the subject, therefore, can hardly be overrated. It is to be remembered, also, that the lives saved by our interference in this instance, unlike what is effected by medicine in many other cases, are mostly the best of the progeny; for it is generally the large and most robust children that present the greatest difficulty in parturition.

If the line of practice which I have advocated recommend itself otherwise to the profession, it will not, I think, be esteemed a disadvantage that it greatly lessens the tædium of attendance to the practitioner.

---

## *Induction of Abortion by Kiwisch's Plan.*

(Half yearly Abstract of the Medical Science, vol. 16. p. 367.)

This plan, which consists in keeping up a continuous stream of warm water against the os uteri by means of a syphon tube, has been tried with some modifications by Dr. Tyler Smith. In his paper on the subject the author alludes to the means ordinarily adopted, and shows the frequent failure of some of them. The use of ergot is, he observes, very uncertain. Sponge tents are difficult of introduction. Puncturing the membranes, though certain to induce abortion when fairly accomplished, cannot, in all cases, be put in practice, as, for instance, in certain cases of deformity of the pelvis. In some cases, likewise, the operation has been followed by injurious results. Such an instance is recorded by Dr. Radford, in which, moreover, the Cæsarean operation had been successfully performed in a former pregnancy. Viewing all these circumstances, the author thought himself justified in experimenting upon Dr. Kiwisch's plan, and records a case in which it was completely successful.

In order to arrive at a just comparison of this with other modes of inducing abortion, Dr. Tyler Smith reviews the conditions which demand this kind of interference in the following manner:

Premature labour has been induced, or the operation recommended, by obstetricians of repute in the following complications of pregnancy:—

* Taking the saving of life at 3 per cent., the numbers would have been, in the 156,000 in the Dublin Tables, 4680.

1. Deformities of the pelvis.
2. Cancer of the os uteri, vagina, or external parts of generation.
3. Ovarian tumours; and fibrous tumours of the uterus.
4. After rupture of the uterus in previous labours.
5. Dropsy of the amnion; ascites; anasarca.
6. Hæmorrhages from the uterus or other organs.
7. Excessive vomiting.
8. Convulsions; insanity; and chorea.
9. Strangulated hernia occuring during pregnancy.
10. When still-born children have been produced at the full time several times in succession.

We shall find, he observes, upon analysis, that the motive for the operation is very different in these numerous conditions, and in the same condition at different dates of pregnancy. Some of the conditions in which it becomes necessary, relate to the uterine organs, others to remote affections of the system; but one of the two things is always essentially requisite,—either that, the ovum or the mother shall be in present or certain future danger from the continuance of gestation, or from the occurrence of labour at the full period.

In a certain class of cases, it becomes necessary to induce labour before the end of the seventh month; when this is the case, the operation simply has reference to the safety of the mother, the ovum being necessarily sacrificed.

In another class, the operation is not called for until after the completion of the seventh month, and in a great majority of these cases the operation is performed with a view to the safety both of the mother and the child, in consequence of the condition of the mother.

In a third class, the operation becomes necessary, in the latter months of pregnancy, to save the life of a child alone, the safety of the mother not being at all involved in the cause of danger to the fœtus, as in diseases of the placenta.

As regards cases requiring the operation before the fifth month, such as excessive and irrepressible vomiting, occurring to such an extent as to threaten death by starvation or debility, the author thinks the induction of abortion by the douche would evidently be far preferable to either the dilatation of the os uteri, the attempt to puncture the membranes, or the administration of ergot. The latter has little power in such cases, while neither dilatation nor puncture could be effected without danger, because of the undeveloped state of the cervix uteri. Cases of this kind are of unusual importance at the present time, when it is computed that half a million of emigrants are passing by sea from the British islands to other countries in a single year. Many of these emigrants are necessarily pregnant women, or women who become pregnant during the voyage, and are liable to serious

danger from sea-sickness, superadded to the sickness of pregnancy. Three cases have come to the author's knowledge, in which death, without the evacuation of the uterus, was caused in this manner. In one of these, death ensued from absolute starvation.

In the class of cases where the state of the mother is such as to threaten her own life and the life of the fœtus, the employment of the douche has advantages over other operations, in all cases except a few instances to be presently mentioned. These advantages lie in its perfect freedom from danger, the simplicity of the operation, and the close resemblance of labour, when thus produced, to natural parturition. For instance, what could form a stronger contrast than the dilatation of a cancerous os uteri by the bag of membranes, and the dilatation or rupture of the same structure by the fœtal head, after the evacuation of the waters? In other cases the advantage of the preservation of the membranes to the child is equally obvious.

After the fifth month, when in the normal condition of the pelvis the os uteri can be reached, and the membranes punctured with tolerable facility, there is a certain number of cases in which the evacuation of the uterus is called for to relieve the effect of pressure or irritation, and in which the evacuation of the liquor amnii is alone sufficient to relieve the urgent symptoms. In these cases, the operation of puncturing the membranes has the advantage of affording immediate relief. Such are dropsy of the amnion; excessive vomiting in the latter months of pregnancy: draining hæmorrhage from partial separation of the placenta; the occurrence of insanity, convulsions, and chorea; or dangerous oppression of the circulation and respiration. Here the mere diminution of the size of the uterus, which may be obtained by the evacuation of the liquor amnii, without the immediate expulsions of the fœtus, sometimes affords instantaneous relief. In all such cases, puncturing the membranes is a more direct method of obtaining relief than any other procedure, and on this account may be preferred.

In cases where the operation is performed to save the child, without reference to the condition of the mother, as when the child has died again and again at the latter part of pregnancy, from imperfect circulation in the placenta, there can be no question of the superiority of the douche to any other method. Its operation is, in fact, scarcely if at all different from natural labour, there is no risk whatever of injury to the mother from its employment.

In fine, from the accounts of the numerical results of the induction of premature labour by the ordinary method, it appears that nearly one half of the children are born dead. This is partly owing to the necessity for its performance in some cases before the fœtus has become viable; and in part to the occurrence of difficult labours from deformity, and from the evacuation of the liquor amnii at the commencement of labour. This latter cause of increased mortality among children born through the induction of premature labour, promises to be entirely obviated by the substitution of the douche for the operation

of puncturing the membranes. There are, indeed, sound reasons for preferring the douche in all cases in which the fœtus is living and viable, and in which the immediate relief to be obtained by discharging the liquor amnii is not imperatively demanded. As regards the mother, the douche relieves her from all risk of mechanical injury to the uterus. It is well known that the proportion of mal-presentations is increased in cases in which labour comes on at the full term. In cases requiring turning after the induction of premature labour, the danger to mother and fœtus is increased by the absence of the liquor amnii. But these and other difficulties, which follow upon the evacuation of the liquor amnii before the commencement of labour, when the fœtus has arrived at the latter months, are greatly diminished by the employment of the douche. This happy improvement promises to be of equal value to mother and child. Above all, it is applicable in cases where the os uteri cannot be reached, where the induction of premature labour by any other known means is impossible, and where the only alternative is the dangers of the Cæsarian section.

---

## *How to distinguish the Corpus Luteum of Pregnancy from that of Menstruation.*

(British and Foreign Medico-Chirurgical Review, April, 1853.)

The researches of Negrier, Raciborski, Pouchet, and Dalton, have proved that many of the yellow spots observed in the ovaries are the results of changes in the shell of the Graafian vesicle, after the escape of its contents at the menstrual period—menstrual corpora lutea, in fact; and that at a certain period they bear a very strong resemblance to the corpora lutea of pregnancy there can be no doubt; although we cannot agree with M. Pouchet that they are identical. The characteristic differences have been carefully investigated by Dr. Dalton, who thus enumerates the particular points in which the corpus luteum of pregnancy differs from that of menstruation: "1. It arrives more slowly at its development, and afterwards remains for a long time as a very noticeable tumour, instead of undergoing a process of rapid atrophy. 2. It retains a globular or only slightly flattened form, and gives to the touch a sense of considerable resistance and solidity. 3. Internally, it has an appearance of advanced organization, which is wanting in the corpus luteum of menstruation. 4. Its convoluted wall, particularly, attains a greater development, this portion measuring sometimes so much as three-sixteenths to one-fourth of an inch in thickness; while in the corpus luteum of menstruation it never exceeds one-eighth, and is almost always less than that. This difference in the thickness of the convoluted wall is one of the most important points of distinction. It will be much more striking when viewed relatively to the size of the central coagulum. 5. The colour is not by any means so decided a yellow, but a more dusky and indefinite hue. 6. If the period of pregnancy be at all advanced, it is not found, like

the corpus luteum of menstruation, in company with unruptured vesicles in active process of development."—*Fleetwood Churchill.*

---

## *Case of Placenta Prævia.* By JOHN DUIGAN, M. D., Gainsborough.

(Lancet, Jan. 22, 1853.)

I was sent for on the night of Saturday, the 8th inst., to assist a medical gentleman residing in the neighbourhood, at a midwifery case; the messenger gave me to understand that the woman was flooding, and in a very dangerous state. Upon arrival, I found the case was one of placenta prævia, in a woman only between seven and eight months pregnant. The labour had begun with hæmorrhage some hours previously; the membranes had been ruptured, but still the flooding continued. The woman was now very much exhausted, the face blanched, the surface cold, the pulse flagging and weak. On examination, the os uteri was found very high up. (in fact, hardly to be reached by the index-finger,) dilated, soft, and dilatable, the placenta nearly covering the open mouth; there was no uterine action, the pain having ceased some time before my arrival.

The question now presented itself—Is this a case for the prior removal of the placenta, or for turning? The only occasion on which I can conceive a preference might be given to the former plan of proceeding, is in a case of great exhaustion, where there is danger of the woman sinking under the operation of version. In the present instance, it was much to be feared that such would be the result. However, taking into consideration that the child was immature, and consequently easy to be extracted; that no uterine expulsive action existed; that the presentation was very high up, so that if the placenta were removed it would be a long time before we could expect uterine action to expel the child; and finally, that the establishment of reaction under such circumstances was very problematical, (seeing that the woman could neither sleep nor take any nourishment, owing to headache and sickness,) we determined to adopt the old procedure of turning and delivering.

The operation was very well and easily performed. I kept my finger on the pulse; it fell suddenly, and became almost imperceptible during the operation. We hastened the extraction, and supplied her freely with stimulants, compressing the uterus with the hand placed externally. The operation concluded, we were glad to find the uterus firm and contracted, and the placenta in the vagina.

The woman was now certainly in the last stage of exhaustion; but by persevering with restorative means, amongst which I think dry, warm heat to the surface was the most useful, we at last established some slight reaction, and she progressed favourably. I need only

state further, that except for intense pain in the head, and sickness, (which latter symptom soon gave way,) the patient continued to improve.

Here, then, is a case where turning has succeeded in an exhausted patient; and in this instance, I think the practice was the best that could be followed. But if the circumstances were somewhat altered, if the labour had been further advanced, the uterus active and the child full-grown, would the result have been equally favourable? or the operation of turning to be preferred to the other more recent practice? I think not; within the last year, I lost a woman who was less exhausted at the commencement of the operation than the present one, but in whom a projecting promontory of the sacrum rendered the extraction tedious and difficult. She sunk from the shock and previous exhaustion.

I have no experience myself of the removal of the placenta in these cases; but considering the high authority on which the practice rests, I should not hesitate in adopting it under circumstances where the version was impracticable, from previous hæmorrhage, or the sacrifice of the hope of a living child was demanded, in order to secure the safety of the mother. But an exception to this rule, I think, must be taken in favour of cases like the present one, where the child is premature, the os high up, and labour-pains absent. In such the operation of turning is almost as easy as the removal of the placenta; and if the placenta be removed, the probability of the woman sinking before reaction or labour-pains come on, is, I take it, sufficient to deter most men from incurring the risk or odium of permitting a patient under his care to die undelivered.

## Literature.

(The Animal Kingdom, by Baron Georges Cuvier.)

(*Continued from page* 260.)

*Of the Forms peculiar to the Organic Elements of the Animal Body, and of the principal Combinations of its Chemical Elements.*

An areolar tissue and three chemical elements are essential to every living body, a fourth element being peculiar to that of animals; but this tissue is composed of variously formed meshes, and these elements are united in different combinations.

There are three kinds of organic materials, or forms of tissue, —the *cellular membrane*, the *muscular fibre*, and the *medullary matter;* and to each form belongs a peculiar combination of chemical elements, together with a particular function.

The *cellular membrane* is composed of an infinity of small laminæ, fortuitiously disposed, so as to form little cells that communicate with each other. It is a sort of sponge, which has the same form as the entire body, all other parts of which fill or traverse it. Its property is to contract indefinitely when the causes which sustain its extension cease to operate. It is this force that retains the body in a given form, and within determined limits.

When condensed, this substance forms those more less extended laminæ which are called *membranes*; the membranes, rolled into cylinders, compose those tubes, more or less ramified, which are termed *vessels;* the filaments, named *fibres*, resolve themselves into it; and the *bones* are nothing but the same, indurated by the accumulation of earthly particles.

The cellular substance consists of that combination [isinglass] which bears the name of *gelatine*, and the character of which is to dissolve in boiling water, and to assume the form, when cold, of a trembling jelly.

The *medullary matter* has not yet been reduced to its organic molecules: it appears to the naked eye as a sort of soft *bouillie* [pultaceous mass], consisting of excessively small globules; it is not susceptible of any apparent motion, but in it resides the admirable power of transmitting to the ME the impressions of the external senses, and of conveying to the muscles the mandates of the will. The brain and the spinal chord are chiefly composed of it; and the nerves, which are distributed to all the sentient organs, are, essentially, but ramifications of the same.

The *fleshy* or *muscular fibre* is a peculiar sort of filament, the distinctive property of which, during life, is that of contracting when touched or struck, or when it experiences, through the medium of the nerves, the action of the will.

The muscles, immediate organs of voluntary motion, are merely bundles of fleshy fibres. All the membranes, all the vessels which need to exercise any compression, are furnished with these fibres. They are always immediately connected with nervous threads; but those which subserve the purely vegetative functions, contract without the knowledge of the ME, so that the will is indeed one means of causing the fibres to act, but which is neither general nor exclusive.

The fleshy fibre has for its base a particular substance termed *fibrine*, which is insoluble in boiling water, and of which the nature appears to be to take of itself this filamentous form.

The *nutritive fluid*, or the *blood*, such as we find in the vessels of the circulation, not only resolves itself principally into the general elements of the animal body,—carbon, hydrogen, oxygen, and azote, but it also contains fibrine and gelatine, all but disposed to contract, and to assume the forms of membranes or of filaments peculiar to them; nought being ever acquired for their manifestation but a little repose. The blood presents also another combination which occurs in many animal solids and fluids, namely, *albumen* [*or white of egg*], the characteristic property of which is to coagulate in boiling water. Besides these, the blood contains almost all the elements which may enter into the composition of the body of each animal, such as the lime or phosphorus, which hardens the bones of vertebrated animals, the iron, which colours the blood itself as well as various other parts, the fat or animal oil, which is deposited in the cellular substance to maintain it, &c. All the fluids and solids of the animal body are composed of chemical elements contained in the blood; and it is only by possessing some elements more or less, or in different proportions, that each is severally distinguished; whence it becomes apparent that their formation entirely depends on the subtraction of the whole or part of one or more elements of the blood, and in some few cases, on the addition of some element from elsewhere.

The various operations, by which the blood supplies nourishment to the solid or liquid matter of all parts of the body, may take the general name of *secretion*. This term, however, is often exclusively appropriated to the production of liquids, while that of *nutrition* is applied more especially to the production and deposition of the matter necessary to the growth and conservation of the solids.

Every solid organ, as well as fluid, has the composition most appropriate for the office which it has to perform, and it preserves it so long as health continues, because the blood renews it as fast as it becomes changed. The blood itself, by this continual contribution, is altered every moment; but is restored by digestion, which renews its matter; by respiration, which sets free the superfluous carbon and hydroyen; and by perspiration and various other excretions, that relieve it from other superabundant principles.

These perpetual changes of chemical composition constitute part of the vital vortex, not less essential than the visible movements and those of translation: the object indeed, of these latter is simply to produce the former.

*Of the Forces which act in the Animal Body.*

The muscular fibre is not only the organ of voluntary motion; we have seen that it is also the most powerful of the means employed by nature to effect the movements of translation necessary to vegetative life. Thus the fibres of the intestines produce the peristaltic motion, which causes the aliment to pass onward along this canal; the fibres of the heart and arteries are the agents of the circulation, and, through it, of all the secretions, &c.

The will causes the fibre to contract through the medium of the nerve; and the involuntary fibres, such as those we have mentioned, are equally animated by the nerves which pervade them; it is, therefore, probable, that these nerves are the cause of their contraction.

All contraction, and, generally speaking, all changes of dimension in nature, is produced by a change of chemical composition, though it consists merely in the flowing or ebbing of an imponderable fluid, such as caloric; it is thus also that the most violent of known movements are occasioned, as combustions, detonations, &c.

There is, then, great reason for supposing that it is by an imponderable fluid that the nerve acts upon the fibre; and the more especially, as it is demonstrated that this action is not mechanical.

The medullary matter of the whole nervous system is homogeneous, and must exercise, wherever it is found, the functions appertaining to its nature; all its ramifications receive a great abundance of blood-vessels.

All the animal fluids being derived from the blood by secretion, it cannot be doubted that the same holds with the nervous fluid, nor that the medullary matter secretes [or evolves] it.

On the other hand, it is certain that the medullary matter is the sole conductor of the nervous fluid; and that all the other organic elements serve as non-conductors, and arrest it, as glass arrests electricity.

The external causes which are capable of producing sensations, or of occasioning contractions in the fibre, are all chemical agents, capable of effecting decompositions, such as light, caloric, the salts, odorous vapours, percussion, compression, &c.

It would seem, then, that these causes act upon the nervous fluid chemically, and by changing its composition: which appears the more likely, as their action becomes weakened by

continuance, as if the nervous fluid needed to resume its primitive composition in order to be altered anew.

The external organs of sense may be compared to sieves, which allow nothing to pass through to the nerve except the species of agent which should affect it in that particular place, but which often accumulates so as to increase the effect. The tongue has its spongy papillæ, which imbibe saline solutions: the ear a gelatinous pulp, which is intensely agitated by sonorous vibrations; the eye transparent lenses, which concentrate the rays of light &c.

It is probable that what are styled irritants, or the agents which occasion the contractions of the fibre, exert this action by producing on the fibre, by the nerve, the same effect which is produced by the will; that is to say, by altering the nervous fluid in the manner necessary to change the dimensions of the fibre on which it has influence, but the will has nothing to do in this action; the ME is often without any knowledge of it. The muscles separated from the body are still susceptible of irritation, so long as the portion of the nerve distributed within them preserves its power of acting on them; the will being evidently unconnected with this phenomenon.

The nervous fluid is altered by muscular irritation, as well as by sensation and voluntary motion, and the same necessity occurs for the re-establishment of its primitive composition.

The movements of translation necessary to vegetative life are determined by irritants: the aliment irritates [or excites] the intestine, the blood irritates the heart, &c. These movements are all independent of the will, and in general (while health endures) take place without the cognizance of the ME; the nerves which produce them have even, in several parts, a different distribution from that of the nerves affected by sensations or subject to the will, and the object of the difference appears to be the securing of this independence.

[In the above sentence, there are distinctly mentioned the three sorts of nerves, the separate functions of which have been conclusively demonstrated by Sir Charles Bell: viz., nerves of *volition*, which transmit the mandates of the will; of *sensation*, which convey to the sensorium the impressions of the senses; and of *sympathy*, or involuntary movement, the union of the ramifications of which in a plexus of konts, or ganglions, is intimated in the text, those of the second class being distinguished by a swelling or ganglion near their base. CARPENTER and WESTWOOD.]

The nervous functions, that is to say, sensitiveness and muscular irritability, are so much the stronger at every point, in proportion as the exciting cause is more abundant; and as this

agent, or the nervous fluid, is produced by secretion [or evolution], its abundance must be in proportion to the quantity of medullary or secretory matter, and the amount of blood received by the latter.

In animals that have a circulation, the blood is propelled through the arteries which convey it to its destined parts, by means of their irritability and that of the heart. If these arteries be irritated, they act more vigorously, and propel a greater quantity of blood ; the nervous fluid becomes more abundant, and augments the local sensibility ; this, in its turn, increases the irritabiltiy of the arteries, so that this mutual action may be carried to a great extent. It is termed *orgasm*, and when it becomes painful and permanent, *inflammation*. The irritation may also originate in the nerve, when it experiences acute sensations.

This mutual influence of the nerves and fibres, either in the intestinal system, or in the arterial system, is the real spring of vegetative life in animals.

As each external sense is permeable only by particular kinds of sensation, so each internal organ may be accessible only to such or such agent of irritation. Thus, mercury irritates the salivary glands, cantharides excite the bladder, &c. These agents are what are termed *specifics*.

The nervous system being homogeneous and continuous, local sensations and irritation debilitate the whole : and each functon, carried too far, may enfeeble the others. Excess of aliment thus weakens the faculty of thought ; while prolonged meditation impairs the energy of digestion, &c.

Excessive local irritation will enfeeble the whole body, as if all the powers of life were concentrated on a single point.

A second irritation produced at another point may diminish, or *divert* as it is termed, the first; such is the effect of purgatives, blisters, &c. [denominated counter-irritation].

All rapid as the foregoing enunciation is, it is sufficient to establish the possibility of accounting for all the phenomena of physical life, by the simple admission of a fluid such as we have defined, from the properties which it manifests.

[The unceasing chemical changes consequent upon vitality must necessarily develope electricity ; and that the *nervous fluid* is no other than the *electric*, may be considered as proved by the identity of their phenomena. Indeed, it has long been known that the transmission of voltaic electricity along the nerves of a recently dead animal, suffices to produce the most violent muscular action ; but the regulation of that action, its exclusive direction to particular suites of muscles, requires the vital impulse. " If the brain," remarks Sir

John Hershel, "(for which wonderfully constituted organ no other mode of action possessing the least probability has ever been devised), be an electric pile, constantly in action, it may be conceived to discharge itself at regular intervals, when the tension of the electricity developed reaches a certain point, along the nerves which communicate with the heart, and thus to excite the pulsation of that organ. This idea is forcibly suggested by a view of that elegant apparatus, the dry pile of Deluc, in which the successive accumulations of electricity are carried off by a suspended ball, which is kept, by the discharges, in a state of regular pulsation for any length of time. We have witnessed the action of such a pile, maintained in this way for whole years, in the study of the above-named eminent philosopher. The same idea of the cause of the pulsation of the heart appears to have occurred to Dr. Arnott, and is mentioned in his useful and excellent work on Physics, to which, however, we are not indebted for the suggestion, it having occurred to us independently many years ago"---*Discourse on the Study of Natural Philosophy; p.* 343. [W. B. CARPENTER and WESTWOOD.]

*(To be Continued.)*

## Therapeutics.

*Convulsions, Puerperal.*—Mr. Bolton (Lancet, Jan. 29) relates a case in which severe puerperal convulsions, coming on immediately before labour, and unchecked by depletion, were completely arrested by the inhalation of chloroform.

Dr. Holst (Neue Zt. fur Geburst., vol. xxxii. p. 85), in a bad case of puerperal convulsions, attended with great rigidity of the os uteri, threw up warm water against the os uteri for six minutes, as in Kiwisch's method for bringing on labour. The os speedily dilated, and labour was completed by the forceps.

*Diabetes Mellitus.*—Dr. Hanekroth (Schmidt's Jahrb, 1853, p. 173) recommends a mixture of sulphate of iron ʒjss., tinct. cinch. c., aq. menth., āā ʒvj.; 20 to 30 drops every 2 hours. In two cases there was perfect recovery.

Mr. Sampson (Lancet, Jan. 8) states that the permanganate of potash (grs. ij.—v. in solution thrice daily) has a marked effect in reducing the quantity of urine in cases of obstinate dyspepsia, and in diabetes mellitus. In a case of the latter disease, the quantity of urine fell from 10—12 pints to its normal amount, but still contained sugar!

*Erysipelas.*—Dr. Creighton (Edin. Month. Jour., Dec. 1852) speaks highly of the *tinct. ferri sesquichlorid.*, in doses of ♏x. to ♏xv. every 2 or 4 hours. It appears, however, that ant. pot. tart. (gr. ¼) was also given, so that the inference appears doubtful.